United Nations
Educational, Scientific and
Cultural Organization

UNESCO Chair in South-South
Cooperation for Science
and Technology to Address
the Climate Change

South-South Technology Transfer to Address the Climate Change: Mechanisms, Issues and Suggestions

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Outline

1. The Provisions about Technology Transfer in International Agreements on Climate Change
2. The Ways and Mechanisms of South-South Technology Transfer
3. The Divergences of IPRs in Technology Transfer of Climate Change
4. The Financial Channels in South-South Technology Transfer of Climate Change
5. The Main Issues of South-South technology Transfer
6. Suggestions for promoting South-South technology transfer in climate change

1. The Provisions about Technology Transfer in International Agreements on Climate Change

- **The Montreal Protocol (1989)**

➢ **Establish a mechanism（include a Multilateral Fund） for the purposes of providing financial and technical cooperation, including the transfer of technologies, to Parties operating under this Protocol.**

➢ **Each Party shall take every practicable step, consistent with the programmes supported by the financial mechanism, to ensure: that the best available, environmentally safe substitutes and related technologies are expeditiously transferred to Parties operating under the protocol.**

1. The Provisions about Technology Transfer in International Agreements on Climate Change

- UNFCCC（**1992**）

  The developed country Parties and other developed Parties included in the Annex shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention.

- **KYOTO PROTOCO(1997)**

  The developed country Parties and other developed Parties shall provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of advancing the implementation of existing commitments.

1. The Provisions about Technology Transfer in International Agreements on Climate Change

- **Bali Action Plan (2007)**

  Enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation, including, inter alia, consideration of: Improved access to adequate, predictable and sustainable financial resources and financial and technical support, and the provision of new and additional resources, including official and concessional funding for developing country Parties.

- **Copenhagen Potocol (2009)**

  we decided to establish the technology transfer mechanism, in order to accelerate research and development and transfer of technology, supporting adaptation and slow climate change action

1. The Provisions about Technology Transfer in International Agreements on Climate Change

- **Cancun Agreements**（2010年）

All Parties should cooperate, consistent with the principles of the Convention, through effective mechanisms, enhanced means and appropriate enabling environments, and enhance technology development and the transfer of technologies to developing country Parties to enable action on mitigation and adaptation.

The policy focus on:

- To promote the transfer of environmentally sound technologies to developing countries
- To establish a mechanism（include a Multilateral Fund） for providing financial and technical cooperation, including the transfer of technologies

The actions and plans of UN organizations

Time(year)	Department	Plans and Initiatives
2009	UNESCO	the UNESCO climate change Initiative
2008	UNESCO	UNESCO 2008-2013 Medium Term
2009	UNESCO	the UNESCO strategy for action on climate change
2010	UNDP	Fast Facts: UNDP and Energy Access for the Poor
2008	UNDP	UNDP and Climate Change
2010	UNDP	A Framework for Climate Finance
2009	UNDP	Charting a New Low-Carbon Route to Development
2008	UNDP	Climate Change at UNDP: Scaling Up to Meet the Challenge
2012	UNDP	Responding to climate change in Least Developed Countries
2008	UNEP	Thoughts Concerning Technical Assistance and Capacity Building to Support the Transfer of Climate Technologies: Possible activities and their potential impact
2008-2011	UNEP、UNDP	Climate Change Adaptation and Development Initiative
	UNIDO	Green Industry initiative
2011	UNIDO	Industrial Policy for Prosperity - UNIDOs Strategic Support
2011	UNIDO	Strategic Industrial Intelligence and Governance
2008-2011	UNEP、UNDP	Climate Change Adaptation and Development Initiative

The main policies for technology cooperation and transfer on climate change of China

Time(year)	Policy	Content
2007年	The international S&T cooperation plan on renewable energy and new energy	Support for basic research, establish industrialization demonstration, implement the strategy of going out, promote international exchanges and dialogues, and cultivate high-level talents.
2007年	China's national program on addressing climate change	China's present situation of climate change; China's guiding ideology, principles and goals, relevant policies and measures , and International cooperation needs on addressing climate change.
2007年	China's special actions on addressing climate change	The achievements of science and technology on addressing climate change, and the technologies and measures required to adapt and mitigate climate change in the future.
2008-2011	China's policies and actions on addressing climate change	Establish effective mechanisms for technical cooperation; promote technology R&D, application and transfer on addressing climate change; strengthen international cooperation; establish the International Technical Cooperation Fund
2009年	China-Africa science and technology partnership plan	Policy research, technical services, HRD, cooperative research, technology demonstrations, in-kind donations and The UN Cooperation Projects towards Africa.
2011-2015	The national "Twelfth Five-Year " development plan of science and technology	Upgrade the technological openness and cooperation level; future improve inter-governmental S&T cooperation mechanism; strengthen S&T cooperation with developing countries.

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

-- The ways of technology transfer

- **Technology demonstration**
- **Technical training**
- **Joint R&D**
- **Engineering contract or contract project**
- **Technology transfer and licensing**
- **Technical consulting and service**
- **TURN-KEY Project**
- **FDI (Wholly- owned and joint investment, co-production)**
- **Equipment donation**

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

- **Technical training**

From 2006 to 2012, Ministry of Science and Technology of China has supported more than 200 international training course for developing countries in China

Name	Time	Place	Field
Combating desertification international technical training course	9-2012	Beijing	Agricultural
Small and medium-sized hydropower international technical training course	10-2012	Changsha	Energy
Biogas technology international technical training course	7-2011	Kunming	Energy
Hybrid rice technology international technical training course	6-2012	Changsha	Agricultural
Water-saving irrigation technology international technical training course	6-2009	Xinjiang	Agricultural
Small-hydropower construction international technical training course	10-2008	Wuhan	Energy
Solar energy application technology international technical training course	7-2012	Lanzhou	Energy

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

- **Technology demonstration**

  Chongqing China-Tanzania agricultural development limited company supported to establish Tanzania agricultural technology demonstration center to carry out many activities such as variety demonstration, technology promotion and training since 2011.

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

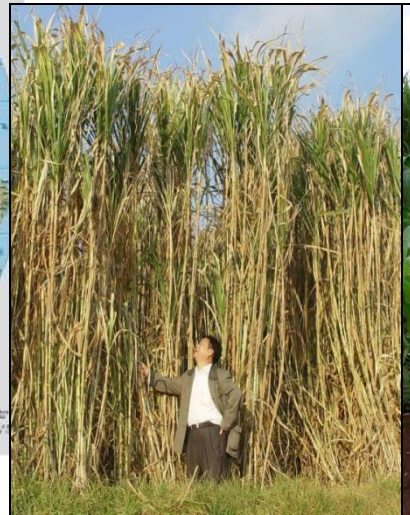
- **Technology demonstration**

National Engineering Research Center of JUNCAO Technology

Application of JUNCAO technology in developing countries extended to 87 countries, translated into 11 languages

Applying scope: Fungi, mushroom , forage grass, lawn grass

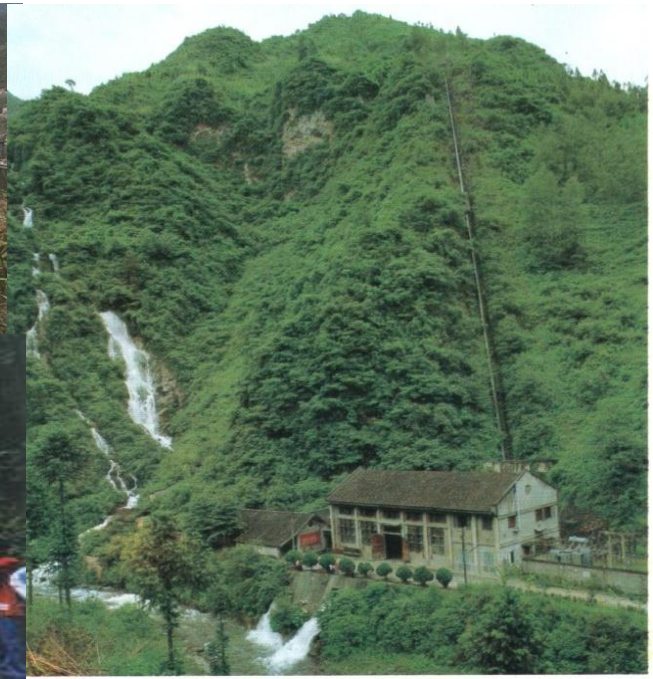
Demonstration Juncao interplanting with crops at contours in Rwanda



2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

- **Contract project**
- Small Hydropower
- International Center on Small Hydropower assist IN-SHP members to develop capacity of SHP development, China has become the main exporter and pilot of small hydropower in the world, and its equipment exported to over 40 countries.



2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

The mechanism of technology transfer

-- Government-led

- **Under the bilateral agreements, conducting the inter-government cooperation projects, implementing the technology transfer on climate change for developing countries.**
- **Advantages:**

  The governments participate in the projects. It makes sure that the projects can be successfully implemented.
- **Disadvantages: lake of sustainability**
- **Suggestions:**

  The support of international organizations or involvement of the market mechanism

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

The projects led by government

Region	Project	objective
China	China-Africa Science and Technology Partnership Program	Enhance African national science and technology capacity building, choose science and technology fields that suit meet African countries' needs and has great impetus on cooperation development
	African water action plan	Help to address African climate change Ease water crisis
European Union	The seventh framework agreement	speed up development and deployment of low-carbon technologies Global scientific research and technology development plan, research on the international front, science and technology difficulties.
Japan	Africa partnership framework for addressing climate change Technical aid agencies JICA	Funding support African governments to tackle climate change The world's largest bilateral aid agencies, to promote developing countries adapt to climate change

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

- China-UNEP Cooperation on Water Resources Management for Africa

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

The mechanism of technology transfer

Market-oriented

- **The enterprise as the main body, according to the market rules to carry out technology transfer to developing countries**
- **Advantages:**

  Market mechanism, Intrinsic motivation, strong sustainability
- **Disadvantages:**

  Due to lack of funds, developing countries can't get the technology their need, and the unfair competition, monopoly and other issues may bring the limitations of market mechanism
- **Suggestions:**

  The government should strengthen the guidance and policy support

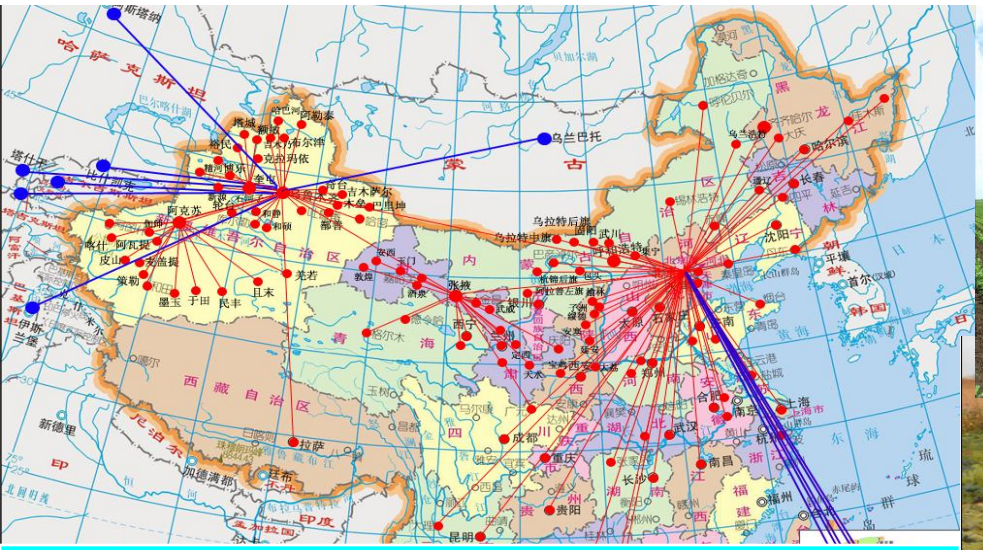
2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

- **Yuan Longping High-tech Company**

  The company has implemented a lot of Agro-techniques transfer in Asia and Africa.
- Agriculture **Business scope**: Seed industry of hybrid rice, hybrid maize, hybrid chili, cotton, vegetable etc.

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

- **Xinjiang Tianye (Group) Co，LTD**
- Tianye supplied the under mulch-film drip irrigation technology and equipments that the developing countries farmer could afford, therefore this technology can be extended in large scale in open-field all over the world.
- **Business scope: Drip irrigation, Mulch film**



Tianye irrigation technology have been transferred to 13 countries.

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

The mechanism of technology transfer

International organizations-led such as UNEP, UNDP, UNESCO

- **Advantages:**

  High credit, easy to be recognized, effective coordination mechanism

- **Disadvantages:**

  lake of funds

- **Suggestions:**

  Strengthen international and inter-regional cooperation to address global issues, to establish the Multilateral Fund.

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

The projects led by UN organizations

Organization	Project	Aid countries
UNESCO	Training and Development for the Integrated Management of the Water Resources in the West of Guatemala	Latin America and the Caribbean
	Tailor made training in water supply and sanitation	South Asia
	Strengthening research capacity in yemen’ s water sector for policy formulation	Middle East and North Africa
UNDP	Alashan Biodiversity Conservation Project	china
	China Promoting Clean Electric Buses for the Beijing Olympics (CEBBO)	china
	The Community-Based Adaptation Programme	10 developing countries
UNEP	Integrating Climate Change in Development Planning	West Africa, East Africa and South Asia
	Analysis of the Economic Costs of Climate Change Adaptation in Africa	Africa
	Mainstreaming adaptation and mitigation of climate change on natural resource	Panama
UNIDO	Arsenic-free drinking water	Bangladesh
	Supporting reconstruction efforts	Indonesia
	Improving livelihoods of HIV/AIDS-affected households	Malawi

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

The Community-Based Adaptation (CBA) programme

- The programme is a collaboration led by the **UNDP**, with financing from the **Global Environment Facility** (GEF) .
- The programme promotes global learning related to community adaptation by sharing lessons from a range of initiatives focusing on natural resource management.
- USD $4.5 million, plus co-financing
- A five-year programme, **2008 to 2012**
- **8-12 projects per country**
- **Ten pilot countries**: Bangladesh, Bolivia, Guatemala, Jamaica, Kazakhstan, Morocco, Namibia, Niger, Samoa, Vietnam

2. The Ways and Mechanisms of South-South Technology Transfer on Climate Change

Nanjing Lake Institute, Lake Tanganyika Authority, and the four countries along the river, conducted the cooperative project under the support of MOST and UNEP

- **Donated instruments, transforming the laboratories along the river**
- **Build Research and Training Center of The Lake Tanganyika Resource ecological protection**
- **Make the Monitoring System Planning and build the monitoring network**

沿湖国家环境监测能力严重缺乏
实验室以玻璃仪器为主

向非方捐赠30万元监测设备
改善硬件设施

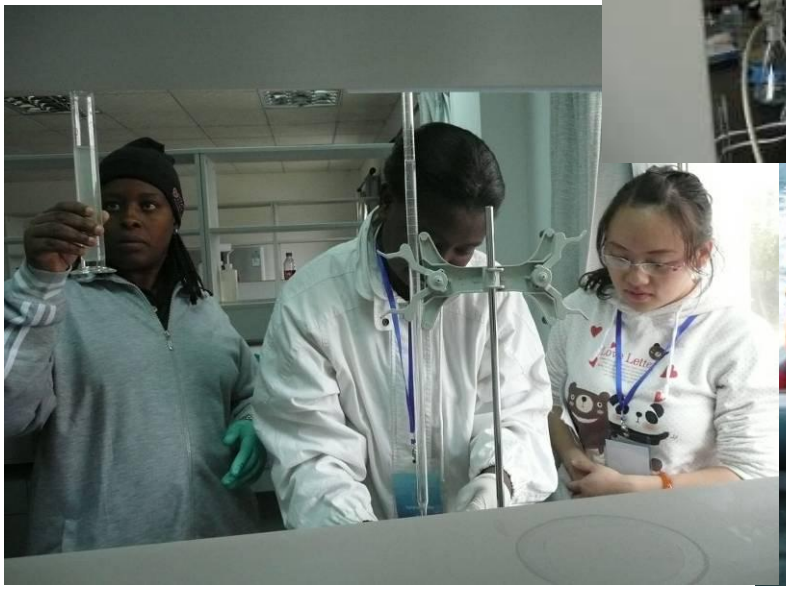
The key to success is government support and coordinating by international organization

Issues: requires the continuous investment by gov









3 . The Divergences of IPRs in Technology Transfer of Climate Change

——IPRs' Background

- **It is necessary to rely on technological progress to address the climate change, and transnational technology transfer is the effective way to facilitate the sharing of knowledge, improve the global climate and environment.**
- **In 2007, Bali Action Plan emphasized that technological development and transfer, funds assistance and investment are the important means of mitigation and adaption to climate change, the IP related to international trade rules plays an important role for green technology transfer.**

3 . The Divergences of IPRs in Technology Transfer of Climate Change

——IPRs' Background

- **In 2007, the "Bali Roadmap" took the IP issue as one of the focus issues for the future of negotiations among the parties.**
- **In December 2009, Copenhagen Conference of UNFCCC stressed the "common but differentiated responsibilities", and promotes extensive cooperation to address climate change effectively.**
- **However, because there is a huge divergence of interests, intellectual property had not been explicitly included in the Copenhagen resolution.**

3 . The Divergences of IPRs in Technology Transfer of Climate Change

——The Claims of Developed Countries

(1) The United States: change the law to refuse to compulsory licensing of green technology.

- **In 2009, The United States modified the relevant laws, and strengthened the barriers for green technology transfer and diffusion. Moreover , they did not recognize the compulsory licensing of climate change, and asked to cancel the intellectual property issues.**

(2) The European Union: rely on intellectual property in green technologies to build the economic advantages.

- **In the Copenhagen Conference, the EU representative said that the IP would not become barriers to climate change, only the inadequate protection of IP would hinder the transfer of green technology.**

3 . The Divergences of IPRs in Technology Transfer of Climate Change

——The Claims of Developing Countries

(1) Developed countries should not take IP as an excuse to evade international obligations of the technical assistance.

(2) The developing countries worried that will lead to the growth of new forms of trade protectionism in addressing climate change. And developing countries ensure that IP protection will not constitute barriers to the transfer of green technology, and have right to implement the compulsory licensing of green technology for the purpose of mitigation and adaption to climate change.

3 . The Divergences of IPRs in Technology Transfer of Climate Change

—— the Main divergences

(1)The relationship between UNFCCC and TRIPs agreement is not clear, especially whether mitigating and adapting to climate change can be used for flexible mechanism for TRIPs agreement is not determined.

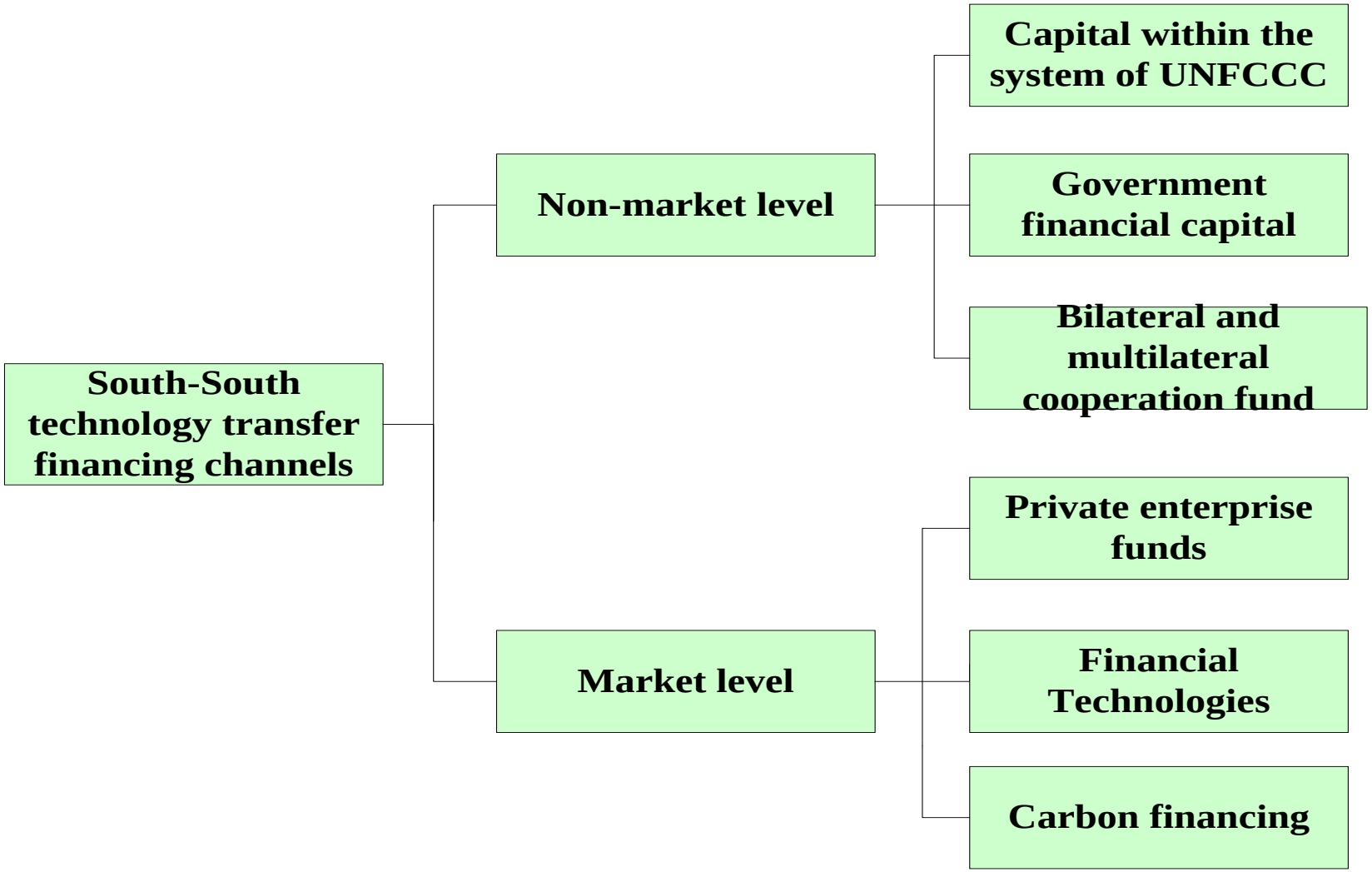
(2) In the framework of TRIPs agreement, countries hold different opinions on the application problem of compulsory license system. Many developing countries claim green technology transfer can be an analogy with medicine industry that suits for compulsory license system. But developed countries hold that industry related to green technology is different from medicine industry, which doesn't suit for compulsory license.

3 . The Divergences of IPRs in Technology Transfer of Climate Change

——Main divergences

(3) Outside the IP system, exploring other forms of development and transfer of green technology is still necessary to discuss . Such as encouraging development and diffusion of green technology through inter-governments' cooperation, subsidies and other forms of incentive mechanism.

4. The Financial Channels in South-South Technology Transfer of Climate Change



（1） The financial mechanism under the UNFCCC

	GEF	SCCF	LDCF	AF	GCF
Time of Establishment	1990	2004	2002	2008	2010
qualifications of recipient countries	Non-Annex I countries	Non-Annex I countries	Least Developed Country	vulnerable countries set out in the Convention	Developing countries Parties
qualifications of recipient activities	Mitigation and Adaptation	Mitigation, Adaptation, Economic diversification	Adaptation	Adaptation	
priorities in funding	Mitigation	Mitigation in Economic diversification and Energy field	An action plan to help countries adapt to climate change		Mitigation, Adaptation, Technology development,Capacity building and system development
Source of funds	Contributi-ons from Annex I countries	Contribution-s from Annex Ⅱ countries	Contributions from Annex I countries	A 2 percent levy on the emission permits generated under the Kyoto Protocol's Clean Development Mechanism	Funded by financial funding provided by developed country contracting party, various financial instruments, financing window

4. The Financial Channels in South-South Technology Transfer of Climate Change

（2） Government's funds for foreign aid program (China)

- The Foreign S&T Aid Fund by Ministry of Science and Technology of China (MOST)
- The Foreign Technology and Product Aid fund by Ministry of Commerce of China
- Foreign aid program fund for South-South Cooperation by NRDC of China
- Other Special Clean Development Fund Mechanism in China

4. The Financial Channels in South-South Technology Transfer of Climate Change

（3） Bilateral cooperation funds

Fund	Total amount	Period	Nominal annual level
Japan Cool Earth Partnership	10 billion	2008-2012	2 billion
ETF-IW of the United Kingdom	1.28 billion	2008-2010	849 million
Norwegian NORAD Rainforest Fund	560 million	2008-2012	110 million
Spanish MDG Fund	117 million	2008-2011	46 million
GCCA of the European Commission	65 million	2008-2010	34 million
German International Climate Initiative	520 million per year		240 million（international component)）
Australian GIFC	206 million		
China-Africa Develop Fund	5 billion	2007——	

4. The Financial Channels in South-South Technology Transfer of Climate Change

（4）Multilateral cooperation funds

Fund	Total amount(US $)	Type of funding	Period
The World Bank Forest Carbon Partnership Fund (FCPF)	165 million	Grants	2008-2012
The GEF Tropical Forest Account(TFA)	60 million	Grants	2008-2010
The World Bank Clean Technology Fund (CTF)		Concessional financing, blended with Multilateral Development Banks financing, as well as bilateral and other sources of finance	2008-2012
The GEF-IFC Earth Fund	200 million	Grants, concessional loans and Innovative funding tools	2008-
The World Bank Strategic Climate Fund (SCF) and Pilot Program for Climate Resilience (PPCR)	1 billion	Grants and Highly concessional loans	2008-2012
The Kyoto Protocol Adaptation Fund		Grants	

4. The Financial Channels in South-South Technology Transfer of Climate Change

(5) Direct Investment from Private Enterprise

- **Products export with high technical content to developing countries via the market mechanism, such as direct investment, joint venture, International cooperation project and demonstration, etc.**

(6) Technology Bank

- **The enterprises can get financial support from the bank with the way that the local government take as a guarantee by using foreign assets of enterprises as mortgage. This is the effective mode of combination of technology and financial.**

4. The Financial Channels in South-South Technology Transfer of Climate Change

(7) Carbon financing

- **Three types of carbon market:**
  - **Joint Implementation(JI) and clean development mechanism(CDM)**
  - **European Union's Emission Trading System（EUETS）**
  - **Voluntary carbon trading market**
- **The main buyers of carbon market:**
  - **Multilateral Fund, such as PCF of the World Bank and BioCarbon Fund**
  - **Enterprise carbon trading in order to complete reduction indicators**
  - **Government funds, such as C-ERUPT Program of Netherlands, and the International investment institutions like British capital group.**

5.The Main Issues of South-South technology Transfer on Climate Change

—— Shortage of funds

（1）Limited by local economic development, developing countries don't have sufficient funds to introduce the advanced technology.

The annual per-capital income average 2009-2010
(unit: US dollars)

Region	2009	2010
World average	8737	9116
Developed countries	37719	38517
South Asia	1114	1222
Sub-Saharan Africa	1137	1176
Least developed countries	664	701
China	3650	4260

5. The Main Issues of South-South technology Transfer on Climate Change

（2） Insufficient of international aid funds

- **Before 2030, developing countries will need $100 billion each year. In the current, the total fund of GEF, LDCF, SCCF, and AF under the UNFCCC was less than $5 billion. So this difference is enormous**

（3）Difficult to coordinate assistance proportion of multilateral cooperation in south-south technology transfer

- **In multilateral cooperation, as the parties take into account their own interests, it is difficult to reach a fair and reasonable assistance way, resulting in the project shelved.**

5. The Main Issues of South-South technology Transfer on Climate Change

——The issues of Intellectual Property Rights

- **Intellectual property system strengthens the monopoly of the technology protection.**
- **Developing countries have to pay expensive cost for getting the environmental technology from developed countries.**
- **In some extent, the intellectual property system hinders the environmental technologies' transfer and their application in developing countries.**

5. The Main Issues of South-South technology Transfer on Climate Change

—— The Weak of Capacity Building

- **Lack of complete National Innovation System**
- **Lack of ability to identify technology needs**
- **Lake of funds**
- **Lake of human resources**
- **Imperfect systems and policies**
- **Emphasis on technology introduction, but neglecting the digestion and absorption of technology**
- **The weak of the supporting infrastructure and industrial base**

5. The Main Issues of South-South technology Transfer on Climate Change

——The issues of communication mechanisms and organizational guarantees

- **Lake of the effective communication channels for technical demand and supply**
- **lack of coordination and resource integration, unable to share information, channels and experience**
- **there is no special agencies to ensure south-south technology transfer effectively operating for a long time**

6. Suggestions for promoting South-South technology transfer in climate change

——Suggestions for Financial Support

- **Improve the financial mechanism under the UNFCCC**
- **Establish bilateral and multilateral cooperation fund of South-South technology transfer**
- **Encourage private capital takes part in technology transfer to developing countries**
- **Establishing and improving the domestic carbon trading market**
- **Promote the combination of public and private capital**
- **Attract the Private Equity(PE)、 venture capital (VC) to attend the South-South technology transfer**
- **Perfect technology financial mechanism to support the South-South technology transfer**

6. Suggestions for promoting South-South technology transfer in climate change

——Suggestions for IPRs of Technology Transfer

- **Establishing a compulsory license system for the IPRs of climate technology**
- **Improving the existing international IPRs system, especially TRIPs agreement**
- **Creating a green IPRs system (include reward mechanism)**
- **Establishing IPRs special fund for South-South technology transfer to address climate change, such as the National Climate Change Fund established by Brazil, and the Carbon Fund invested by the British government**

6. Suggestions for promoting South-South technology transfer in climate change

——Suggestions for the Capacity Building of Developing Countries

- **Promoting the National Innovation System constructing**
- **Making a Technology Transfer Plan and related polices**
- **Training a large number of technological innovation talents**
- **Enhance digestion and absorption of imported technology**
- **Promoting the combination of technology introduction and industrial development**
- **To carry out international S&T cooperation and exchanges actively**

6. Suggestions for promoting South-South technology transfer in climate change

—— Suggestions for Organizational coordination and information platform construction

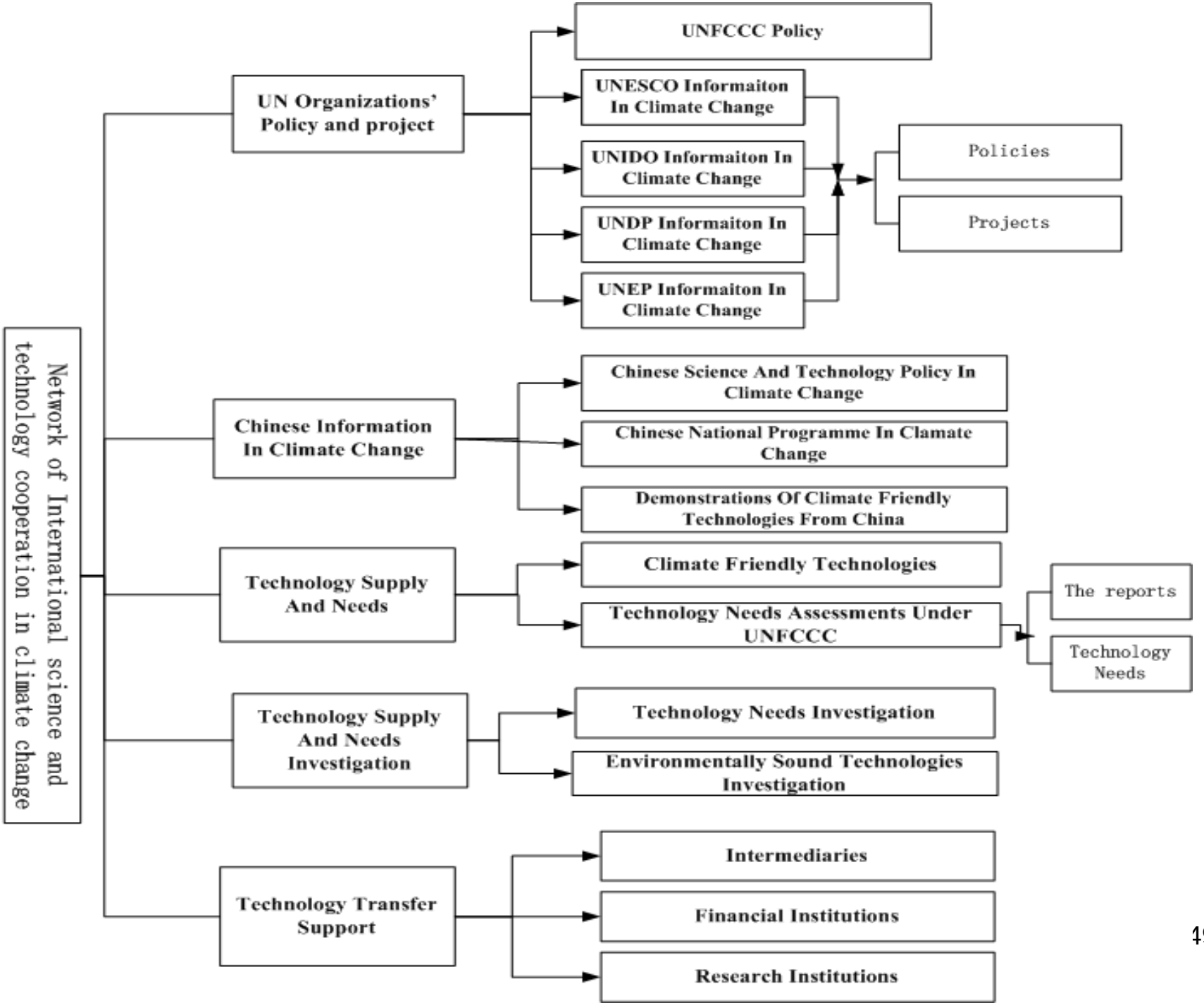
- **Establish a special committee for technology transfer under UNFCCC**
- **To carry out technology needs survey for developing countries to address the climate change**
- **To carry out technology supply survey in developed and emerging countries**
- **To build the information platform for connecting the technology supply and demands between developed and developing countries, as well as the effective working network and its operating mechanism**
- **Strengthen the performance evaluation of technology transfer**
- **Encourage public-private partnerships to carry out technology transfer and commercialization**

The UNESCO Chair in South-South Cooperation on Science and Technology to Address Climate Change

- The UNESCO Chair in South-South Cooperation for S&T to Address the Climate Change was established in 2012 in BIT

The UNESCO Chair in South-South Cooperation on Science and Technology to Address Climate Change

- Now, the Chair with the partner CSTEC are carrying out a foreign aid project funded by MOST of China
- The project will build a information platform for South-South technology transfer on climate change, and will build two sub-sites located in Thailand and Ethiopia, covering the surrounding areas of Southeast Asia, and Nile Basin countries in Africa respectively


Network of International science and technology cooperation in climate change
UN Organizations' Policy and project
UNFCCC Policy
UNESCO Informaiton In Climate Change
UNIDO Informaiton In Climate Change
UNDP Informaiton In Climate Change
UNEP Informaiton In Climate Change
Policies
Projects
Chinese Information In Climate Change
Chinese Science And Technology Policy In Climate Change
Chinese National Programme In Clamate Change
Demonstrations Of Climate Friendly Technologies From China
Technology Supply And Needs
Climate Friendly Technologies
Technology Needs Assessments Under UNFCCC
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Technology Supply And Needs Investigation
Technology Needs Investigation
Environmentally Sound Technologies Investigation
Technology Transfer Support
Intermediaries
Financial Institutions
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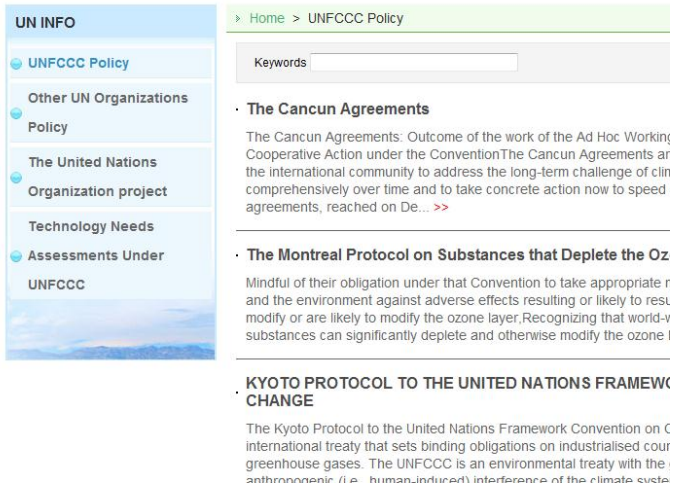

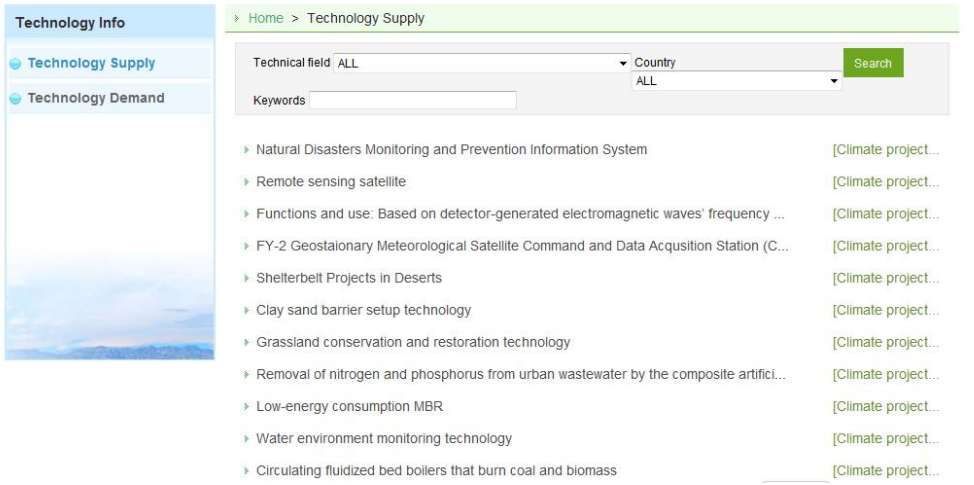

Thanks for your attention !