



United Nations
Educational, Scientific and
Cultural Organization



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

The Mechanisms, Barriers and Solutions in South-South Technology Transfer to Address Climate Change

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Agenda

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1 .The Provisions about Technology Transfer in the international Climate Change agreement

- **The Montreal Protocol (1-1-1989)**
 - Acknowledging that special provision is required to meet the needs of developing countries, including the provision of additional financial resources and access to relevant technologies, bearing in mind that the magnitude of funds necessary is predictable.
 - The Parties shall establish a mechanism (include a Multilateral Fund) for the purposes of providing financial and technical co-operation, 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 the international Climate Change agreement

- **UNFCCC (6-4-1992)**
- **The developed country Parties and other developed Parties shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under some articles of the protocol. They shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of some implementing measures .**
- **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.**



1. The substance about Technology Transfer in the international Climate Change Protocols

- **KYOTO PROTOCOL(12-1997)**
 - **Cooperate in the promotion of effective modalities for the development, application and diffusion of, and take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies, know-how, practices and processes pertinent to climate change, in particular to developing countries, including the formulation of policies and programmes for the effective transfer of environmentally sound technologies that are publicly owned or in the public domain and the creation of an enabling environment for the private sector, to promote and enhance the transfer of, and access to, environmentally sound technologies.**
 - **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 substance about Technology Transfer in the international Climate Change Protocols

- **Bali Action Plan(12-2007)**
 - **Enhanced action on technology development and transfer to support action on mitigation and adaptation, including, inter alia, consideration of: Effective mechanisms and enhanced means for the removal of obstacles to, and provision of financial and other incentives for, scaling up of the development and transfer of technology to developing country Parties in order to promote access to affordable environmentally sound technologies.**
 - **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.**



1. The substance about Technology Transfer in the international Climate Change Protocols

- **Copenhagen Protocol (12-19-2009)**
 - **Due to the historical responsibility of developed countries, they must ensure financial support as well as technology development and transfer to support action on mitigation and adaptation in developing countries.**
 - **The developing countries must make their best effort to implement nationally appropriate mitigation actions, most of which should be supported by financial resources and technological development and transfer provided by developed country Parties.**
 - **In order to promote the development and transfer of technology, 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**



2. The main mode and mechanism of South-South technology transfer

- **The main mode of technology transfer**
 - **Technology demonstration**
 - **Technical training**
 - **Technology trade**
 - **Technology Licensing**
 - **Technical consulting and service**
 - **TURN-KEY Project**
 - **Direct investment (Sole or joint investment, co-production)**



- **Technical training:**

- In July 2012, Lanzhou University launched a technical training to students from the Sultan, Tunisia, Pakistan and other developing countries in Asia. This training is about the improved methane biomass energy technology under subnormal circumstances. It imparted students the research and application the experience of using biogas and biomass energy under subnormal conditions.





• CSAIM Technology demonstration:

- Tanzania agricultural technology demonstration center is built by Chongqing China-Tanzania agricultural development limited company. Dating from April 2011, the center has carried out many activities such as variety demonstration, technology promotion and training since. The center brought the new varieties of rice and loofah to Tanzania. The effect of the variety demonstration zone is very good and the new varieties are liked by the local people. The center has great influence in Tanzania.





2. The main mode and mechanism of South-South technology transfer

- **The mechanism of technology transfer**
- **Government-led**
 - **Through the policy such as bilateral agreements between the governments, inter-governmental cooperation projects could be implemented. Backward developing country can achieve technology transfer on climate change.**
 - **Advantages:**

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

The support of international organizations; market mechanism involved.



2. The main mode and mechanism of South-South technology transfer

- **Government-led case**
 - **Uganda in African, one of the most water-scarce countries in the world. The Water Resources Research Institute of Gansu province from China supplies Uganda the technical support and service in the field of water resources. The Academy will assist the Republic of Uganda on the preparation of the "Uganda national water resources planning and provide Uganda demonstration and extension of advanced rainwater utilization technology, the technical training of rainwater utilization and the management of water resources.**





2. The main mode and mechanism of South-South technology transfer

- **The mechanism of technology transfer**
- **Market-led case**
 - **The enterprise as the main body, according to the market rules transfer the technology to developing countries**
 - **Advantages:**

It has enough power to transfer. Strong sustainability.
 - **Disadvantages:**

Due to the limitations of the market mechanism, it may produce undesirable or vicious competition, etc.
 - **Suggestions:**

The government should strengthen the guidance.



2. The main mode and mechanism of South-South technology transfer

- **Market –led case**
 - **Longping High-Tech (Yuan Longping High-tech Agriculture Co.,Ltd.)is responsible for the hybrid rice technology cooperation projects that China aids East Timor. The project was launched in 2008. Its first phase is for demonstration planting whose output is four times more than the local varieties. And the second phase is to help East Timor establish a series of modern agricultural development system, technology extension system and service system.**



East timor technology demonstration



Liberia reporting higher yields





2. The main mode and mechanism of South-South technology transfer

- **The mechanism of technology transfer**
- **International organizations –led**
- **International organizations such as UNEP, UNDP don't have ability of technologies developing, but because of their special position, they can guide the technology transfer and assist developing countries to get technologies.**
- **Advantages:**

International organizations have great influence on the international society, and the projects can be recognized easily in the developing countries.
- **Disadvantages:**

The funds from the UN Organizations have reduced a lot, they have few finance to assist the developing countries. Now they always play the role of matchmaking.
- **Suggestions:**

Cross-border and inter-regional cooperation. Build Multilateral Fund



2. The main mode and mechanism of South-South technology transfer

- International organizations –led case
 - rehabilitating around 20,000 hectares of forest in the nyangani mountain range in Zimbabwe, home to forest leopards, baboons, hyenas, 150 bird species and about 20 species of fish, with GEF funding





2. The main mode and mechanism of South-South technology transfer

- **The mechanism of technology transfer**
- **Relying on technology transfer platform**
- **Case: Yunnan Science and Technology Information Institute takes advantage of geographic location to ASEAN countries in technology transferring.**
 - **Scientific and technological cooperation and exchange platform constructed by Contractors the intergovernmental Joint Commission, International Symposium ,Forums etc.**
 - **Solar building integrated demonstration base established in Thailand, Carry out technical training, To help small and medium enterprises, promote technology and product output, expand overseas markets.**
 - **Characteristics: Integrated demonstration base and technology transfer platform should be constructed by taking the advantage of geographic location.**
 - **Issues: The need for government support or fund investment to promote platform and base construction, To promote the participation of SMEs in the South-South cooperation and technology transfer.**



3.The barriers of South-South technology transfer

——Financial shortage

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

**The annual per-capital income sheet for 2009-2010
in regions worldwide (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



3.The barriers of South-South technology transfer

(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 was less than \$5 billion. The actual demand \$75 billion per year .**

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

- **In multilateral cooperation, the parties find difficult to reach a fair and reasonable assistance way because of their own interests, causing project in abeyance**



3.The barriers of South-South technology transfer

——Intellectual Property Issues

- **Intellectual property system has monopolistic protection for technology.**
- **Developing countries have to paid expensive cost for environmental technology of developed countries.**
- **The existing of intellectual property system hinders, to some extent, the transfer and utilization of environmental technology.**



3.The barriers of South-South technology transfer

——Capacity building

- **They haven't a clear recognition of their own national situation and have no idea about which technology fields are needed most**
- **Facing the disadvantages of asymmetric information situation**
- **Insufficient funds**
- **Insufficient of human resource reserves**
- **Out-of-date ideas**
- **Imperfect system**
- **Stressing on introducing funds but neglecting technology**
- **weak in the Supporting infrastructure and industry foundation**



4 .The divergences and Countermeasure on Intellectual Property Rights

——Background

- **It is necessary to rely on technological progress to respond to the challenges of global 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 the Intellectual property rights is related to international trade rules, and plays an important role for green technology transfer.**



4. The divergences and Countermeasure on Intellectual Property Rights

—Background

- **In 2007, the "Bali Roadmap" established, and identified the issue of intellectual property rights as one of the focus for future negotiations between the parties.**
- **In December 2009, UNFCCC Copenhagen meeting stressed the "common but differentiated responsibilities", and cooperated extensively to effectively respond to the challenge of climate change.**
- **However, because there is a huge divergence of interests, intellectual property had not been explicitly included in the Copenhagen resolution.**



4. The divergences and Countermeasure on Intellectual Property Rights

——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 to transfer and diffuse. Moreover , they did not recognize about compulsory licensing to address climate change, and asked for the abolition of intellectual property issues.**
- (2) The European Union: rely on intellectual property in the green technology to build positive economic advantages.**
 - In the Copenhagen conference, the EU representative said that the intellectual property rights would not become barriers to climate change, only inadequate protection of intellectual property rights would hinder the transfer of green technology.**



4. The divergences and Countermeasure on Intellectual Property Rights

——The claims of developing countries:

- (1) The developing countries: insist that developed countries may not take intellectual property as an excuse to evade international obligations of the technical assistance.**
- (2) The developing countries worry that responding to climate change will lead to the growth of new forms of trade protectionism. And developing countries ensure that intellectual property rights will not constitute barriers to the transfer of green technology, and purposed to have the right to compulsory licensing of green technology implementation in order to mitigate and adapt to climate change.**



4 .The divergences and Countermeasure on Intellectual Property Rights

——Main divergences

- (1)The relationship between UNFCCC Convention and TRIPs agreement is not clear. Especially whether slowing 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 compulsory license system. But developed countries hold that industry related to green technology is different from medicine industry, which doesn't suit compulsory license.**



4. The divergences and Countermeasure on Intellectual Property Rights

——Main divergences

(3) Outside the intellectual property system, discussion for exploring other forms of exploitation and transfer for the green technology is still necessary. Such as encouraging development and diffusion of green technology through cooperation between the government and public agencies, subsidies and other forms of incentive mechanism.

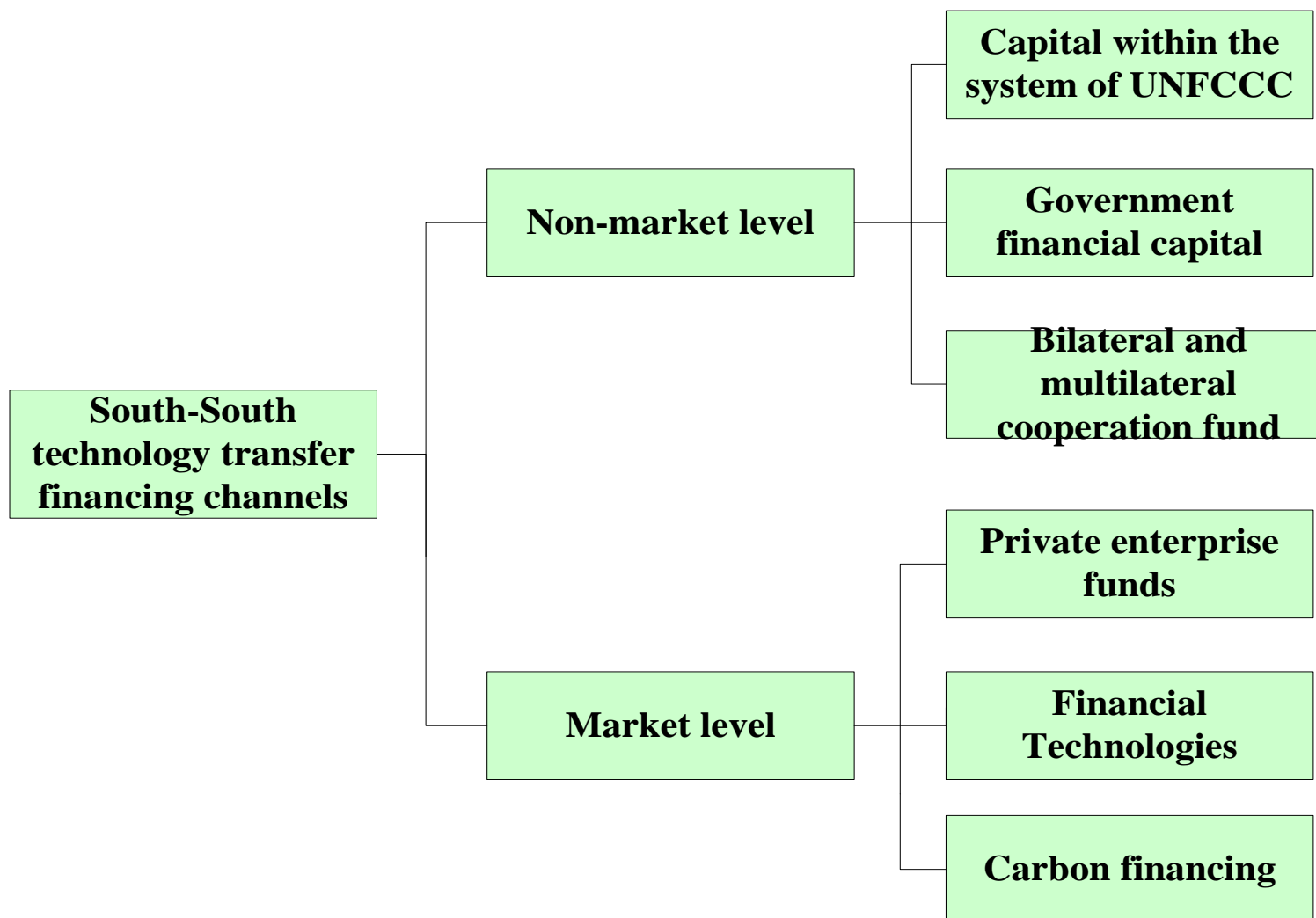


4. The divergences and Countermeasure on Intellectual Property Rights

—— Countermeasure

- (1) Establishing a "compulsory license for climate technology system"**
 - **Extending system of compulsory license to the field, in which we promote and apply the technology friendly to the climate**
- (2) Improving the existing international intellectual property right system**
- (3) Creating green intellectual property right system**
 - **Special green patent system; reward mechanism of technology patent friendly to the climate**
- (4) Establishing special fund for intellectual property right of climate technology**
 - **IP special funds under the UNFCCC, and some funds established by state, such as the national climate change fund established by Brazil, and the carbon fund invested by the British government**

5. The financial mechanism in south-south technology transfer





(1) The financial mechanism of 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	Contributions from Annex I countries	Contributions 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



5 The financial mechanism in south-south technology transfer

(2) Supported by government's funds

- **The foreign aid fund of The Ministry of Science and Technology of the people's Republic of China(MOST)**
- **The foreign aid fund of The Ministry of commerce of the people's Republic of China**
- **Special Clean Development Fund Mechanism**



5 The financial mechanism in south-south technology transfer

(3) Bilateral and Multilateral cooperation funds

Bilateral cooperation funds

Fund	Total amount	Period	Nominal annual level
Japanese 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—	



5. The financial mechanism in south-south technology transfer

(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	



5. The financial mechanism in south-south technology transfer

(5) Direct Investment from Private Enterprise

- **Export the goods with high technical content to the Sub-regional countries via the ways that market as the media, such as direct investment, joint venture, International cooperation project and show-how, etc.**

(6) Financial Technologies

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



5. The financial mechanism in south-south technology transfer

- **(7) Carbon financing**
- **If carbon reduction can through the authentication in the international carbon market, then the carbon emission reduction credit can trade through market exchange.**
- **There are three major types of carbon market, One kind is Joint Implementation(JI) and clean development mechanism(CDM), another kind is European Union's Emission Trading System (EU ETS) , the third kind is voluntary carbon trading market**
- **There are four main kind of buyers including carbon market: Multilateral Fund, such as PCF of the World Bank and BioCarbon Fund, the carbon trading of enterprise that in order to complete reduction index, the government funds, such as C-ERUPT Program of Netherlands, and the International investment institutions like British capital group.**



5. The financial mechanism in south-south technology transfer

——Development Strategies

- **Improve the capital mechanism within the system of UNFCCC**
- **establish bilateral and multilateral cooperation fund of South-South technology transfer**
- **Encourage private capital take an active part in technology transfer to developing countries**
- **Establishing and improving a domestic carbon market**
- **Combine with public and private capital**
- **Attract and encourage the Private Equity(PE)、 venture capital (VC) to attend the South-South technology transfer**
- **Perfect the mechanism of technology and finance support for the South-South technology transfer**



Thanks for your attention!