Special Section 1: Carbon Trading: An opportunity for Pakistan

SS1.1 Background

There is an international consensus that global warming has significantly jeopardized the sustainability of atmosphere essential for economic and social development. Food and water scarcity, increase in coastal floods, and deterioration in health emanating from spread of diseases are some likely repercussions of global warming. Therefore extensive measures are required to reduce Green House Gas (GHG) concentration to cope with global warming.[1] According to the United Nations Inter-governmental Panel on Climate Change (IPCC), GHG emission needs to be reduced by 60-80 percent from the level of 1990s to stabilize the global temperature. The Kyoto Treaty (KT) in 1997 presented a global consensus that increasing global atmospheric temperature may be a serious threat to global economic development and therefore needs to be monitored and controlled. An effort was made to convert this consensus into legal binding through the creation of Kyoto Protocol (KP) in 2005. However, only 35 countries (western and eastern Europe, Canada and Japan, etc.) have ratified the protocol while a vast majority has only accepted or approved[2] the protocol.

Under the Kyoto Protocol, developed countries have been given a binding target of reducing combined GHG emission by 5.2 percent[3] from the level of 1990s during the period 2008-2012. This was mainly due to the fact that developed countries are contributing more to the global current stock of GHG concentration. On the other hand, flexibility has been extended to developing countries by not putting any cap on their carbon emission level. This flexibility shows the realization at international level that developing countries lack resources and capacity to monitor climate change. However, greater vulnerability of developing countries[4] to climate change cannot be ignored due to high population growth, poor health status, and incapability of coping up with natural disasters like flood and earthquakes, etc. This signifies a greater need for developing countries to switch to clean industries and to develop capacity for emission reduction. Lack of

[1] Greenhouse gases are gases in an atmosphere that absorb and emit radiation within the thermal infrared range. This radiation is the fundamental cause of the heating of the surface of a planet (known as greenhouse effect).
[2] Ratification defines the international act whereby a state indicates its consent to be bound to a treaty if the parties intended to show their consent by such an act. However, in practice of certain states acceptance and approval have been used instead of ratification when, at a national level, constitutional law does not require the treaty to be ratified by the head of state (Arts.2 (1) (b), 14 (1) & (2) and 16, Vienna Convention on the Law of Treaties 1969).
[3] USA has been given the target of reducing GHG emission by 7 percent, EU by 8 percent and Japan by 6 percent.
[4] UNFCC, IMF

resources and absence of modern technology are major constraints of developing countries in achieving environment sustainability.

These facts highlight the climate change as one of the greatest global action problems with differentiating motives of developed and developing countries. Addressing this issue, KP offers following market mechanisms:

1. Joint Implementation (JI)
2. International Emission Trading (IET)
3. Clean Development Mechanism (CDM)

In all the three mechanisms, permission can be granted to the developed countries that have a commitment on carbon emission to emit more than the prescribed limits. This can either be done through: a) carbon acquisition (which is allowed under JI and IET, and b) carbon trading (which is allowed under CDM). Carbon acquisition is an international transaction of carbon between countries that have commitment under the KP. For instance, a country that is currently emitting above its limit of carbon emission can actually compensate by acquiring permission for additional emission of carbon from the country which is emitting less than its limit. Unlike carbon acquisition, carbon trading has no pre-condition of having cap on carbon emission under KP. In other words, voluntary participants (mainly developing countries) can also benefit from this mechanism (*Article 12, Kyoto Protocol*). For instance, a country that is currently emitting at its limit of carbon emission can acquire permission for additional carbon emission by investing in emission reduction projects in developing countries. The absence of pre-conditions for participating in CDM projects shows its relevance to developing countries including Pakistan.

SS1.2 Carbon Trading (CT)

CT is a market-based mechanism for dropping GHG concentration through reducing carbon dioxide emission in the atmosphere. Under CDM, carbon trading takes place through the exchange of Certified Emission Reduction (CER) units.[5] Specifically, the developed countries help developing countries in carrying emission reduction/removal projects and in exchange, earn CERs from developing countries. Purchasing one unit of CER allows developed country to emit one tonne of carbon dioxide in addition to its limit. These CERs are actually traded internationally through carbon exchanges.[6] To facilitate the settlement of transactions and funding, banks and investment companies are extending services.

[5] One CER is equivalent to reduction of one tonne of carbon dioxide.

[6] Presently, five carbon exchanges are operational around the globe: Chicago Climate Exchange, European Climate Exchange, Nord Pool, Power Next and the European Energy Exchange.

Average price of issued CERs is estimated to be Euro 17.5 with a range of Euro 10 to Euro 25 for the period 2008-2012.[7]

China is the largest seller of CERs capturing almost 60 percent share (see **Figure SS1.1**) followed by India having 11.3 percent share and Brazil having 6.5 percent. However, in terms of numbers of registered projects by host party,[8] India leads (see **Table SS1.1**) the seller side by 31.42 percent followed by China with 21.68 percent. On the buyer side, UK has got the highest share of 28.8 percent followed by Switzerland with 20.7 percent and Japan with 11.3 percent.

Figure SS1.1: Expected Average Annual CER

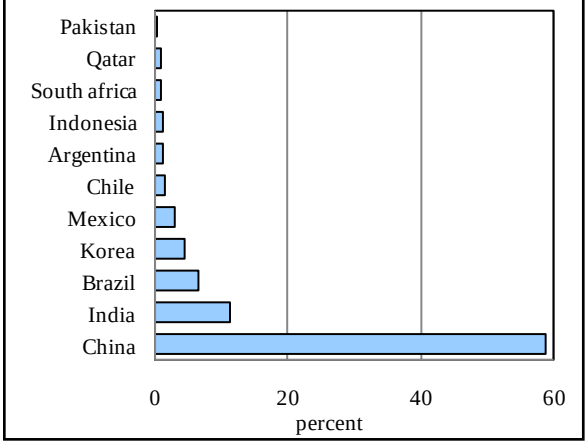


Table SS1.1 : Registered Project Wise Top Traders of CDM Market (Percent)

Sellers	Market share	Buyers	Market share
China	58.9	UK	28.82
India	11.3	Switzerland	20.71
Brazil	6.5	Japan	11.27
Mexico	2.9	Netherlands	11.05
Chile	1.5	Sweden	6.33

Source: UNFCC Website

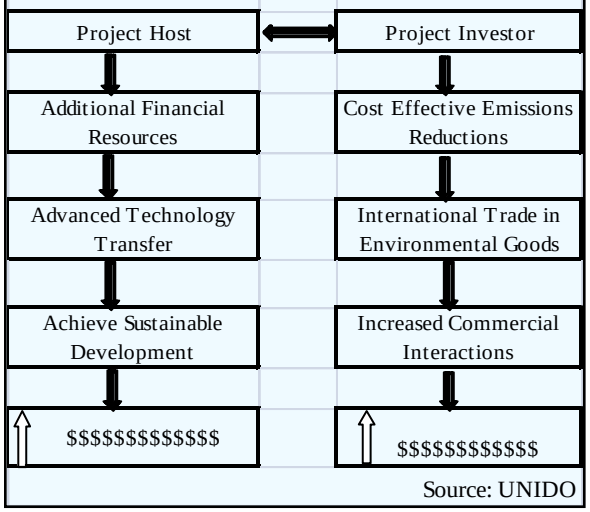
It appears as a paradox that both India and China are among top ten polluters of the world due to their high growth[9] yet are sellers of carbon credits in the market. This flexibility of KP trading mechanism signifies its acknowledgement that developing countries may continue for time being with their development process given their limited resources. However, these countries need to build-up their capacity to handle the critical issue of environment sustainability going forward.

CDM project appears to be mutually beneficial for both developing and developed countries (see **Figure SS1.2**). Developed countries (project investor) can make use of these credits to meet their carbon cap targets under KP. Developing countries (project host), on the other hand, can benefit from this mechanism in terms of technology transfer and resource inflow to ensure sustainable development.

[7] Clean Development Mechanism 2008 In-Brief, UNFCC.
[8] The country where project takes place to earn CERs is the host party.
[9] High per capita GDP growth and population growth are among major factors leading to higher GHG concentration (Source IMF).

However, the debate regarding the effectiveness of trading cannot be ignored, especially when the situation after KP expiry (in 2012) is unclear. Many developing countries are also suspicious about motives of developed countries[10] and perceive this mechanism as an entry point for developed countries to intervene in their development process. On the other hand, developed countries claim that they are paying more for this global action problem recognizing the limited resources of developing countries.

Figure SS1.2: CDM Project



Source: UNIDO

SS1.3 Carbon Trading in Pakistan

IPCC has identified Pakistan as one of the countries that can be hit hardly by climate change. This is mainly due to the dependency of the economy on agriculture and its low forest cover[11] with a high rate of deforestation at around 0.2-0.4 every year.[12] Though government has allocated funds to compensate for the estimated annual loss of US $1.8 billion due to climate change;[13] ministry of environment (MoE) has indicated the gap of 67 million rupees in the allocated budget**.** Realizing the vital role of climate change for sustainable development, Pakistan has started participating in the international arena of environment. For instance, Pakistan has been signatory to all significant international declarations of environment, including, Kyoto Treaty, Millennium Declaration; however, the relatively active participation of the country at international level started with the acceptance of KP in January 2005. KP has provided the country an entry avenue in the form of carbon trading to the international environment market. For CDM projects, Ministry of Environment has been declared a focal point while its National Operational Strategy was approved in 2006.

[10] Agarwal,R.(2008). Towards a Global Compact for Managing Climate Change, Discussion Paper 08-22, Harvard Kennedy School.
[11] 5.2 percent of country's land (Source: Annual Report 2008-09, State Bank of Pakistan)
[12] MOE, Pakistan.
[13] Abdullah, (2006). Sources and Consequences of Environmental Pollution and Institutions' Role in Pakistan. *Journal of Applied Science.*

Another critical factor for Pakistan to participate in carbon trading can be the fear of exclusion. Fear of exclusion refers to the larger opportunity cost of non-participation for any country when other countries are participating. This opportunity cost can be huge for Pakistan as not only its peer countries are participating but one of its biggest export markets- Europe, has got serious concerns about Pakistan's environment standards.[14] The concern of Europe may result in restricting our exports to the region thus adversely affecting the export earnings and BoP of the country. The country's current ranking on Environment Performance Index (EPI);[15] 124th among 149 countries, is not satisfactory as well. An active participation at international level towards environment sustainability can not only improve the environment status of the country, but may also enable the country to enhance its credibility internationally in this regard.

SS1.4 Current Status

Currently, Pakistan has 14 approved CDM projects[16] with a status of host country while sixty projects are in pipeline. The main objective of these projects is to bring positive impact on socio-economic status of the country along with its contribution towards environment sustainability. To achieve this, the government has set conditions on the following four criterions for projects' approval: environment criteria, social criteria, economic criteria and technological criteria. According to CDM cell, MoE Pakistan, these projects are expected to bring US $ 345 million foreign investment along with 3.35 million tonnes GHG reduction per year as well as a positive impact on agriculture productivity, employment opportunity and technology transfer.

Following the international trend, MoE, Pakistan, has identified six major groups as priority sectors (see **Table SS1.2)**. The table indicates that even among selected sectors for CDM, few have not been explored as yet. However, the distribution of CDM projects among the sectors is in accordance with the

Table SS1.2: Sector Wise CDM Projects (percent)

		Pakistan	
Sectors	**Global**	**Current Projects**	**Pipeline Projects**
Energy	64.96	57.14	58.33
Waste management	19.45	28.57	16.67
Industrial process	9.63	14.29	16.67
Transportation	0.13	0	0
Land use & forestation	0.08	0	8.33
Agriculture & livestock	5.78	0	0

Source: UNFCC & CDM Cell, MOE , GOP

[14] Ayub Qutub, S (2003). Trade in Environmental Services and Human Development Country Case Study Pakistan, UNDP

[15] EPI is based on 25 indicators in six policy categories: Environmental Health, Air Pollution, Water, Biodiversity and Habitat, Productive Natural Resources, Climate Change.

[16] Only three projects are registered with UNFCC

international trend.[17]

Pakistan at present possesses a very small share (0.4 percent) of the CT market. One possible explanation for this small share can be that a country having significant population below poverty line cannot afford to allocate significant resources for monitoring climate change. That said, climate uncertainties can have more devastating impact on poor and vulnerable societies.[18] The inclusion of sustainable environment in millennium development goals is an indication of universal consensus on the linkage between poverty reduction and environment sustainability. Acknowledging the relationship, the government has included environment not only as an important aspect of Poverty Reduction Strategy Paper (PRSP) but has also made it part of the Public Sector Development Program (PSDP); 38.39 million rupees have been allocated for CT. The government is also responsive to the needs of capacity building and mass awareness to increase market participation in carbon trading. In this regard, the ministry has not only arranged many workshops and seminars but has also initiated few joint ventures with donors (see **Table SS1.3**)

Table SS1.3: Current CDM Capacity Building Projects

Project Name	Donor	Duration	Cost (US $ million)
Capacity Building for Development and implementation of Carbon Finance Projects	World Bank	18 months	0.57
Institutional Capacity Enhancement	United Nations Industrial Development Organization	18 months	0.674
Hands on Capacity Building of Forest Official in Developing Proposals for Afforestation/ reforestation Project Design documents	Swiss Agency for Development Cooperation	2 Years	9.84 million rupees

Source: CDM Cell, MoE, GoP

SS1.5 Way Forward

Pakistan has yet to maximize benefits of carbon trading in terms of technology transfer and resource inflow. This avenue can be utilized for economic development and poverty alleviation by integrating it with development policies. Capacity building along with strengthening of CDM set-up in the country may help in creating conducive environment for the efficient functioning of the domestic environment market. As mentioned earlier, a major criticism on KP is its uncertain status after 2012. However, Pakistan should focus on KP as an opportunity for addressing environmental issues while capitalizing on economic benefits of the protocol.

[17] The numbers of energy project are low though their share is highest due to the quantity.
[18] Patel,P.& Ahmed,S.(2007).Managing Climate Change