

THE CLEAN DEVELOPMENT MECHANISM AND INVESTMENT OPPORTUNITIES IN THE FORESTRY SUB-SECTOR OF THE NIGERIAN ECONOMY

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ABSTRACT

In an effort to tackle the problems posed by the global climate change, the United Nations, at its 1993 conference in Rio de Janeiro, Brazil, set up the United Nations Framework Convention on Climate Change (UNFCCC) as the principal instrument for global action against climate change. Parties to the UNFCCC adopted the Kyoto Protocols to achieve this objective. The protocol requires industrialized countries to reduce their emission of Greenhouse Gases (GHGs) approximately 5% below the 1990 levels between 2008 -2012. The Protocols also defined the Clean Development Mechanism (CDM) as a way of introducing climate-friendly offshore technologies into developing economies under a bilateral agreement between Annex I (Greenhouse gas emitting countries) and Non Annex I parties to the UNFCCC on measures to reduce GHG emissions as well as ensure attainment of sustainable development. Forestry projects are accorded recognition, as one of such offshore technologies that could receive funding under the CDM process, because of its potential to reduce the build-up of GHGs in the atmosphere. The paper opines that this recognition offer a vista of opportunities for Nigeria to attract the much needed funding that would enable her to substantially increase the size of her forest estate and, through this means, attain sustainable development. It also opens up an opportunity for Forestry Association of Nigeria (FAN) to showcase itself as a foremost organization in the field of environmental sustainability. The paper, therefore, urges the association to take the lead in the development and management of forest-based CDM Projects aimed at carbon sequestration.

Keywords: Climate Change; Global Warming; Greenhouse Gases; Carbon Dioxide; Anthropogenic; Carbon Sink; Carbon Sequestration

INTRODUCTION

Climate change, caused by the emission of greenhouse gases (GHGs) into the atmosphere, has, today, emerged as a major environmental problem all over the world. From human activities, like burning of fossil fuels, and land use practices, especially deforestation, carbon dioxide (CO₂) and other heat trapping gases are released in large quantities, into the atmosphere. The continued build up of these gases in the atmosphere has led to the phenomenon of global warming. This has given rise to many negative consequences, including abrupt changes in atmospheric weather patterns, irregular bouts of drought, desertification, floods, unpredictable storms and hurricane, increases in heat waves, incidence of diseases, famine, and many more incidences of catastrophic proportion. This is the reason why measures aimed at curbing the concentration of these gases in the atmosphere is being advocated.

In a bid to tackle the problems of climate change, at its 1992 conference in Rio de Janeiro, Brazil, the United Nations Conference on Environmental and Development (The Rio Earth Summit) came up with an enabling legal instrument, the United Nation Framework Convention on Climate Change (UNFCCC). The ultimate objective of the UNFCCC, which was ratified by 154 countries, is to achieve, in accordance with the relevant provision of the convention, stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Parties to the UNFCCC adopted the Kyoto Protocol to the UNFCCC in December 1997 as the main strategy to achieve this objective. The protocol requires industrialized countries to reduce their emissions of GHGs approximately 5% below the 1990 levels by 2008 – 2012. No new commitments were introduced for developing countries, but the “Clean Development Mechanism” (CDM) was defined to promote co-operation between developing and developed countries. The aim of CDM is to provide avenues for introducing climate-friendly, offshore technologies into developing economies under a bilateral agreement between Annex I Parties (greenhouse gas emitting countries) and Non-Annex I Parties to the UNFCCC, on measures to reduce GHG emissions and provide stage 1 adaptations to climate change.

The Kyoto Protocol and the CDM also recognized the contributions, that forest has towards absorbing GHGs. According to the Protocol, the net absorption or emission of carbon from forest plantation and harvest-since 1990 can be included in the calculation of emission reduction (Yang, 2002). For this reason, reducing carbon emission through forest has become the common goal in all countries in the world.

In the subsequent discussion, the role of forestry in carbon sequestration and hence investment opportunities inherent in the forestry sub-sector of the Nigerian economy under the CDM and its potentials for achieving sustainable development in Nigeria shall be highlighted.

THE KYOTO PROTOCOL AND THE CDM

The Kyoto climate treaty, also known as the Kyoto Protocol, is seen as an essential first step against climate change. The Protocol, which falls under the UN Framework Convention on climate change, is the world’s only agreement for limiting global warming pollution. It is also the basis for increasing effective global action against climate change in the coming decades. The protocol was conceived during the third conference of the parties of UNFCCC in December 1997. The most important aspect of the Kyoto Protocol is the binding commitment by 39 developed countries and countries with economies in transition (i.e. the Annex B countries, called Annex 1 countries in UNFCCC) to reduce their GHG emissions by an average of 5.2% of 1990 levels by the commitment period of 2008 to 2012.

Another important output of the agreement was the recognition of forestry activities or “sinks” as valid options for reducing the net concentration of atmospheric GHGs. This is mentioned in Articles 3.3 and 3.4 of the protocol, which deals with “afforestation, reforestation, and deforestation” and “additional human-induced activities related to land-use change and forestry”, respectively. Two of the Kyoto protocol’s flexibility mechanisms are related to project-based activities. They are the Clean Development Mechanism and Joint Implementations. The CDM involves investment by developed countries in carbon offset projects in developing countries. As defined by the protocol, its purpose is two-fold; first, it assists developing countries (non Annex 1 Parties) in making progress towards sustainable development and

contributing to UNFCCC's objectives; and second, it assists developed countries and countries with economies in transition (Annex 1 Parties) in achieving their emission reduction targets.

The basic criteria for projects to qualify as CDM projects is that they must assist host countries to meet their sustainable development objectives while contributing to the ultimate objective of the UNFCCC by providing real measurable long-term benefits through reduction in GHG emissions. According to Ibitoye in NEST (2004), such projects must be host country driven and leads to the transfer of environmentally sound technologies to the recipient country. GHG reduction capacity can be measured by developing a baseline and an abatement scenario, the difference of which will lead to the gross GHG reduction capacity for the country.

Two different project types are recognized under CDM. These are the energy side (supply and demand) and the non-energy side (carbon sequestration and others). The energy supply side project center on generating electricity (and includes projects aimed at reducing transmission and distribution losses, fuel substitution, energy efficiency improvements, and increased use of renewable energy, and an oil and gas sector management (gas flare reductions, increased gas utilization and energy efficiency improvement in refineries). Similarly, the demand side project types include fuel substitution (especially increased use of gas in industrial, residential, and other sectors), energy efficiency improvements, and development and deployment of renewable technologies to all end use sectors, as well as rural electrification, urban transportation management, and modal shifts in the transport sector.

Some of the important activities in the non-energy sectors for reducing GHG emissions and contributing to sustainable development in Nigeria include increased afforestation and reforestation as well as increased carbon sequestration in soils through improved agricultural/forestry practices (NEST, 2004).

CARBON SEQUESTRATION POTENTIAL OF FORESTRY AND ITS IMPLICATION FOR THE CDM

Forests play a major role in maintaining GHGs in the atmosphere because they can act as sources and sinks of carbon. Among the CO₂ exchange between the air and land plants, 90% are achieved by the forest vegetation. On the other hand, forests absorb CO₂ from the atmosphere during photosynthesis and by so doing helping to fix carbon in vegetations. Damage to forests will result in releasing of the sequestered carbon into the atmosphere and increasing the GHG emission (Brown, 1996; Brown, S., Hall, C.A.S., Knabe, W., Raich Trexler, M.C. & Woomer, P. 1993).

Land use change and forestry (LUCF) activities, mainly tropical deforestation, are said to be a significant net source of CO₂, accounting for 1.6Gt/year out of the total anthropogenic emissions of 6.3 Gt/year (Schimmel, .D., Enting, I.C., Heimann, M., Wigley, T.M.L., Rayneud, D... Seigenthaler, U. 1995; Watson, R.T., Noble, R.I., Bolin, B., Ravindranath, N.H., Verado D.J., & Dokken, D.J. (Eds.), 2000). An international team of experts from the U.S., Brazil, and France compared data from obtained from eleven climate – carbon computer models. The results show that deforestations in the tropics account for nearly 20% of carbon emissions due to human activities and will result in the release of an estimated 87 to 130 billion tons of carbon over the next century. This is said to be greater than the amount of carbon that would be released by 13 years of global fossil fuel combustion at current levels. This new research shows the considerable value of maintaining and managing tropical forests as carbon sinks. (www.globalcarbonproject.org/products/publications.htm)

A more interesting aspect of the forest-based GHG mitigation projects is their relative cheapness compared to other climate change mitigation options, like energy efficiency, gas flare reductions, etc. For instance, recent research findings have shown that in the short-run, the cost of carbon abatement could easily exceed \$100 per ton in energy projects in industrialized countries. However, if the forest sector is included the cost of reducing carbon emission, sequestering carbon could be reduced to a range between \$10 and \$100 per ton of carbon (Castro & Cordero, 2001). Another forest based carbon sequestration study carried out in the U.S has put the estimated cost for the sequestration of up to 500 million tons of carbon per year, an amount that would offset up to one third of current annual U.S carbon emissions to the range of between \$30 to \$90 per ton. These costs on a per-ton basis, according to the findings, are said to be comparable to those estimated for other climate change mitigation options, such as fuel switching. The study results indicated that forest-based carbon sequestration can play an important role in future mitigation efforts. Based on the findings, the researchers recommended the inclusion of forest-based carbon sequestration in comprehensive assessment of policy responses to the problem of global climate change (Stavins & Richards 2005). It is therefore not surprising that the Kyoto Protocol recognized forestry projects as major activities in the non-energy sectors for reducing GHG emissions under its CDM processes.

FOREST BASED CARBON SEQUESTRATION PROJECTS

During the almost sixteen years since United Nations Conference on Environment and Development (UNCED), forestry-based carbon offsets have evolved from a theoretical idea to a market mechanism for accomplishing global environmental objectives. As of 2000, as reported by Moura Costa P.H, (2001), more than 40 forestry projects had been established with the main objective of fixing carbon and preventing its release to the atmosphere. In the countries from tropical Latin America and Africa, in particular, more than 75% of the projects with CO₂ mitigation potential are said to be forestry projects (ISTF News, 2002). A few of such projects are highlighted below.

A CARE/WRI Project in Guatemala, one of the first forest sector responses to climate change, incorporates agroforestry and woodlots, and credits for prevention of logging damage. It is funded partly by Applied Energy Services, a U.S electricity company to compensate for the CO₂ emissions from a new power plant. It is expected to fix 18.1Tg of carbon over a 40 year period (Trexler, M.C., Faeth, P.E., & Kramer, J.M. (1989). Similarly in the Netherlands, the four regional electricity companies, collectively known as SEP (Samenwerkende Electriciteitsproduktiebedrijven/Dutch Electricity Board) have committed themselves to allocating around US \$10 million each year to establishing at least 150,000 tree plantations, for an initial period of 25 years. The plantations are to offset the CO₂ emissions of a 600 mw Coal-fired Dutch power plant, but it is also intended that they will contribute to the projected development of the regions in which they are established. SEP has created the FACE foundation (Forests Absorbing Carbon dioxide Emission) to initiate appropriate forestry projects both in Europe and the tropics (FACE, 1991; Van Ginnekan, 1991) to absorb an amount of CO₂ equivalent to the emission of a medium sized coal-fired power plant (4,000 megawatts) during a 40-year lifetime. Its first project was a 25,000 ha enrichment planting initiative in Malaysia (Moura – Costa et al, 1996). This was followed by four other projects involving the reforestation of degraded pasture land by small farmers in Ecuador (1992), rehabilitation of degraded pasture land by small farmers in Ecuador (1992), rehabilitation of an acid rain degraded park in the Czech Republic (1992), urban forestry in the Netherlands (1993), and rain forest rehabilitation in Uganda (1994). The Australian “One Billion Tree Plan”, set up in 1989, is also multipurpose in design aiming to conserve biodiversity but also to offset climate change. It aimed at planting 1 billion trees on 1 million ha by 2000, including 400 million in

community planting and 600 million in a National Afforestation Program to establish a hardwood plantation. The carbon fixation potential of the program has been calculated at 300-500 million tons over the 50 year lifetime of the program. (Eckersley & Hawke, 1989, in Andrasko, 1990).

Projects were established in anticipation of expected changes in environmental legislation that would require the polluter to reduce GHG emission, and were created to capitalize on their public relations value. The model for the transaction carried out in the early years consisted of investor companies paying for the full costs of carbon sequestration activities, in return for the promises of carbon credits generated as a result of these activities. The party responsible for the project implementation, in general, received payment for all costs involved in developing the project and is given unrestricted access to all forest products derived from the project.

GHG mitigation funding covered a cumulative 4 million hectares of forest worldwide, while IPCC noted that forestry has a potential for offsetting approximately 15% of the world's GHG emissions. If the current investment trend continues, it is expected that a huge infusion of new capital may be seen in the forest sector, which will have enormous implications for forestry, sustainability, and conservation.

PROSPECTS AND OPPORTUNITIES FOR FOREST – BASED CDM PROJECT IN NIGERIA

Inadequate funding has been at the forefront of factors militating against the sustainable development and management of forest resources in Nigeria. Because of the long gestation nature of forestry, banks, and other financial institutions and since the private sectors do not fancy investments in the forestry sub-sector, the government has remained the sole financier of forestry projects and programs. Government, on their own part, due to political expediency, is also not interested in investing on projects with long gestation period such as forestry. Now, the CDM is opening up a window of opportunities for the attraction of the much needed investment capital. Bearing in mind recent research findings, which indicated that investing in forest-based carbon sequestration in the developing countries is one of the cheapest ways any of the Annex 1 countries can meet up with their GHG emission reduction target, these countries will be willing to partner with any interested third world country in this direction. Nigeria should, therefore, take advantage of such windows of opportunities to develop her forestry sub-sector of the economy. The Nigerian Government is, therefore, called upon to take pro-active steps and draw up a policy framework that will make it possible for her to benefit from the well over US \$9 billion a year in the carbon market (ISTF News, 2002), between industrialized and developing countries. If such massive investments in a forest sub-sectors can be assured, not only would Nigeria be counted as a major player in the global efforts to combat climate, but she would also be in a position to realize the other underlying objectives of forest conservation, such as production of wood and non-wood products, natural resource protection, wildlife management, recreation, and rehabilitation of degraded lands. Of course, all these would have a forward and backward linkage to all other aspects of our national economy and would therefore be contributing to the overall sustainable development of the country.

CONCLUSION

The Kyoto Protocol and the CDM have combined to make Carbon a tradable commodity. Nigeria's sustainable development part will be extensively enhanced if she does everything possible to capture a substantial part of this global carbon market. There are, however, several technical and scientific issues related to the use of forest activities for carbon

benefits, including additionally, without – project baseline scenarios, leakage, permanence, accounting, measuring and monitoring methods, and accuracy and precision of the carbon benefits that needs to be taken care of. If Nigeria is, therefore, to benefit from this multi-million dollar carbon market, there is a need for the country to formulate the necessary guidelines and methods for dealing with many of these issues. The time to do that is now and Forestry Association of Nigeria (FAN) should take the lead. This is “a once in a lifetime” opportunity FAN has to showcase itself as a leading campaigner in environmental sustainability. FAN needs to be an active participant in the formulation and implementation of all forest-based CDM projects in Nigeria. But it seems we are already being left behind. FAN, therefore, needs to liaise with the Federal Ministry of Environment and other NGOs already involved in the CDM projects.

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