

Potentials of clean development mechanism

The main benefits of Clean Development Mechanism (CDM) are harnessed by large developing countries like China, India etc. by shifting to clean energy through power and energy projects.

MIRZA SHAWKAT ALI AND MAHFUJUR RAHMAN

In order to contest the escalating risk of climate change, the United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1994 by a group of proactive governments of the world. Albeit it conceded that GHGs emissions need to be reduced; the convention, however, did not set any mandatory level of reduction for any individual state. Credential of incepting Clean Development Mechanism or in brief CDM as a way of climate change mitigation goes to article 12 of Kyoto Protocol. CDM as a collaborative approach of work for promotion of sustainable development can be accomplished by unique partnership between developing and developed countries toward climate change mitigation.

Projects are undertaken in developing countries that reduce greenhouse gas emission in comparison to baseline scenario. Carbon Emission Reductions (CERs) generated by CDM project are bought by developed countries to fulfil their quota of emission reduction under Kyoto Protocol. In 1997 Kyoto Protocol was added to the UNFCCC treaty, where 39 Annex I countries (developed nations) are required to cut back on their GHG emissions to 5% below the year 1990's level by 2012 as binding emission reduction commitments. The protocol also founded three flexibility mechanisms for the reduction of the GHGs. These mechanisms are known as Emission Trading, Joint Implementation (JI), and Clean Development Mechanism (CDM).

The CDM consists of two major objectives: i) to assist parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the

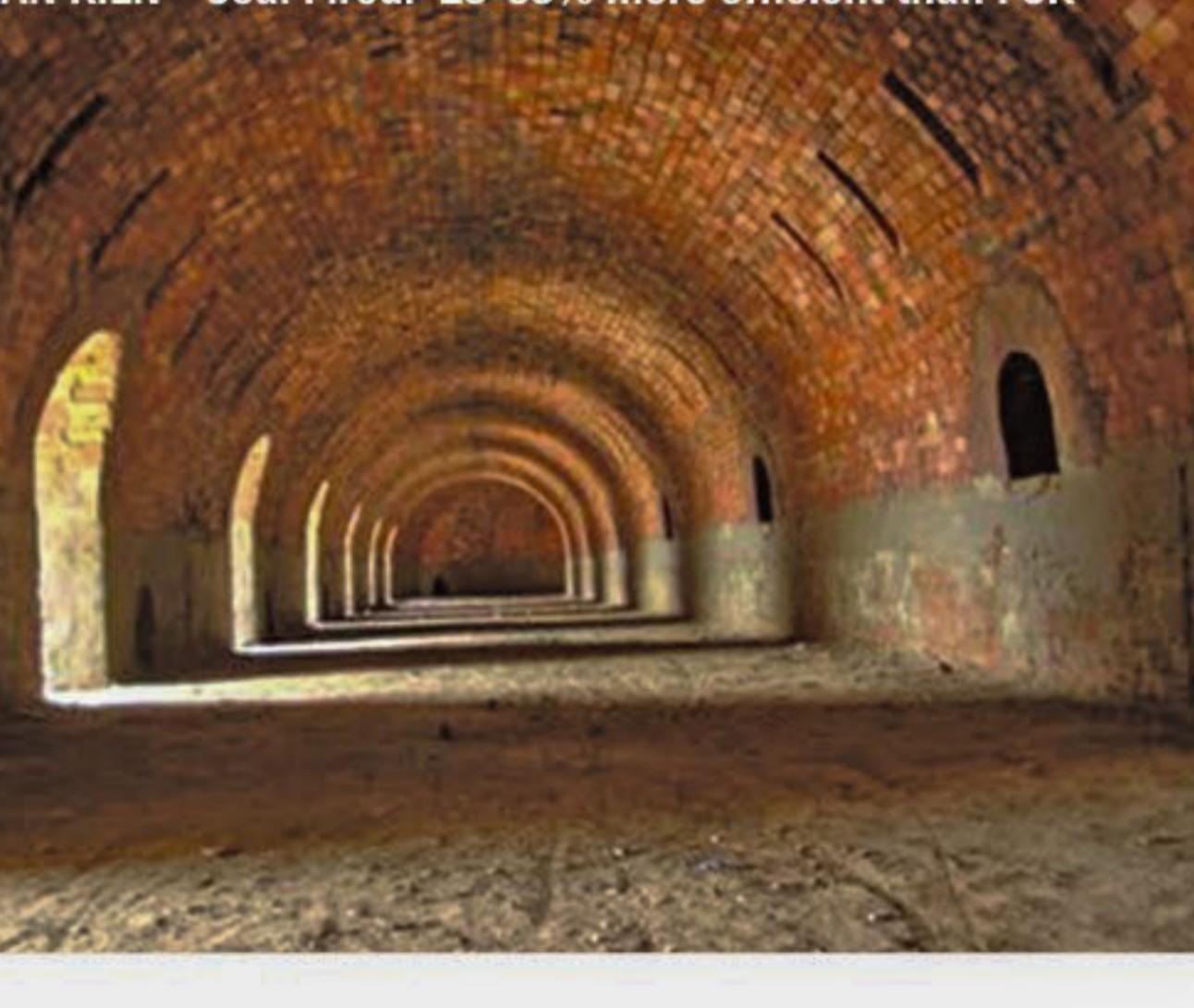
UNFCCC, which is to prevent dangerous climate change; and ii) to assist parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments (GHG emission caps). The second objective is attained by selling the emission reduction projects from developing countries to countries with reduction commitments. The ensuing emission reductions are identified as Certified Emission Reductions (CERs). It is, however, important to ensure that the asserted emission reductions are tangible and "additional" to baseline emission scenario.

Developing CDM Projects

In general, the proposed CDM projects are assessed by the Designated National Authority (DNA) and a project is only appreciated as a potential CDM project if it has an authentic reduction potential. A project must state a baseline emission and the possible reduction caused by its implementation below baseline level. Emission reductions of a CDM project are calculated as the difference between the baseline emissions and the project emission. Likewise, probable leakages are required to be included in the calculation. Specific technical and financial feasibility studies are mandatory for a project and a complete Project Design Document (PDD), outlined by the UNFCCC, is required to be submitted to the Designated National Authority (DNA). The project proponent ought to follow given methodologies set up by the UNFCCC. Following a thorough evaluation by the DNA and the national CDM executive board, the PDD is used to attract clients or potential buyers and investors.

Enormous potentials in fuel and energy sector cogeneration: A waste-

HOFFMAN KILN - Coal Fired: 25-35% more efficient than FCK



heat boiler can recover a good portion of the wasted heat to produce steam. This will replace the existing boiler thus saving the natural gas used to make steam. If the industry does not require steam, then absorption refrigeration can be used for air-conditioning or making ice. Otherwise, the steam can be sold to neighboring industries.

Captive generation: Because of electricity shortage and unreliable power supply, gas utility started allowing captive power generation about 12 years back. 1200+ MW is now in Captive Generation. 25% of the gas for power is consumed by this sub-sector. Plant efficiencies vary from 28% to 42% (average = 35%). Waste heat is mostly not utilized. Ideal opportunity for cogeneration.

Age-old state owned industries can be brought under CDM projects: Four urea fertilizer producing plants (NGFF, PUFF, ZFCL) consume for 1 ton of urea more than 40 Mcf of natural gas, compared to 23 Mcf and 30 Mcf by KAFCO and JFCL respectively. 15 medium sized sugar mills owned by BSFIC are so old that simply building new mills can double the energy efficiency. Each mill can export surplus electricity between 3-4 MW to the grid.

Potentials of forestry sector for clean development: Forest lands being plundered and destroyed by money-monger illegal traders, dishonest forest officials and poor local people is a common preoccupation about degradation of forest lands in Bangladesh. Incentives in form of money got from selling CERs can be a good source of fund needed for better management of forests.

Developing CDM Projects

Sectors	Potential projects/activities
Energy	<ul style="list-style-type: none"> Development of renewable energy sources (hydro, solar, wind and biomass). Fuel substitution measures. Improvement in electricity transmission and distribution network. Reduction of leakage in transport, handling and distribution of oil and gas.
Wastes	<ul style="list-style-type: none"> Composting from municipal organic waste. Landfill gas recovery and use for electricity generation. Waste-to-energy conversion activities (e.g. biogas, bio-gasification). Refuse Derived Fuels (RDF); <i>The waste sector projects prevent the release of methane from biomethanation processes.</i>
Buildings (residential, commercial and government)	<ul style="list-style-type: none"> Energy-efficient design of buildings including cogeneration. Energy-efficient appliances. Energy conservation measures. Reuse of waste water Use of renewable energy sources.
Agriculture	<ul style="list-style-type: none"> Solar and wind pumping Improvement in use of agrochemicals (fertilizers and pesticides). Reduction of energy use for irrigation through efficient pumps and demand-side management Improvement in cultivation practices to reduce methane emissions.
Forests	Afforestation and reforestation.
Industry and Manufacturing	<ul style="list-style-type: none"> Cogeneration Energy conversion and energy-efficiency measures. Process modifications in order to lower emissions. Change of feedstock in boilers (e.g. oil to gas).
Mining	Coal bed methane recovery.
Transport	<ul style="list-style-type: none"> Fuel-efficiency measures. Introduction of alternate fuels (e.g. biofuels). Improvement in public transport. Urban planning and traffic management.

mon preoccupation about degradation of forest lands in Bangladesh. Incentives in form of money got from selling CERs can be a good source of fund needed for better management of forests.

CDM through waste management

Waste management offers a good potential for CDM projects in Bangladesh since huge amount of waste is produced due to a large population. Waste management scenario is a little bit better due to operation of community based waste collectors but what happens is improper disposal of waste. All the collected waste (both by municipalities and community based waste collectors) are dumped in the open that ushers pollution of air, water and soil, near dumpsites. Anaerobic decomposition of organic waste produces methane, a greenhouse gas having 25 times GWP of carbon dioxide.

CDM for sustainable transport sector

Transport system comprises two major physical components i.e. transport infrastructure and vehicles along with human interferences as driver, passenger and controlling authority. So, while thinking of sustainable transport sector we need to address these two components individually and combined.

- Use clean and renewable energy sources
- Ensure health and safety of passengers, drivers and other related people of transport sector
- Minimal travel and minimal pollution



Solar electricity can save fossil fuel and generate Carbon Credits.

tion of environment

New and emerging technologies suitable for CDM projects

- Metering of domestic gas connections
- Improved gas cookstoves
- Efficient building: Solar reflective glass
- Solar lanterns to replace kerosene lamps
- Hollow bricks to replace solid bricks

Conclusion

The main benefits of Clean Development Mechanism (CDM) are

Present status of developing CDM projects in Bangladesh

Name of Project	Relevant Information	Status
1 Landfill gas extraction and utilization at Matail Dumpsite, Dhaka by Waste Concern	Expected to generate 3-5 MW electricity from the extracted methane DNA approval: 8.08.04	Got registration from CDM Executive Board. DCC is yet to give the proponent access to Matail Dump site.
2 Composting project at Matail Dumpsite, Dhaka by Waste Concern	Kitchen market waste would be composted DNA approval: 8.08.04	Has gone into production
3 Solar Home System by Grameen Shakti	805,892 Solar Home Systems will be distributed 566,899 tons of CER will be generated during 7 year crediting period DNA approval: 19.03.2008	Under validation process
4 Solar Home System by Infrastructure Development Company Limited (IDCOL)	226,700 units Solar Home Systems will be distributed 243,976 tons of CER will be generated over 7-year crediting period DNA approval: 19.03.2008	Under validation process
5 Certified Emission Reduction (CER) of Chunati CDM Reforestation Project: Mitigation of GHG emission through co-management of Chunati wildlife Sanctuary by Forest Department	In the next 42 years (by 2008-2050) 7,58,450 tons of CER will be generated DNA approval: 07.06.2009	Approved by National CDM Board
6 Certified Emission Reduction (CER) Improved Cooking Stoves programme in Bangladesh by SZ Consulting and Grameen Shakti	Replace 1 million conventional stoves with improved cookstoves DNA approval: 07.06.2009	Approved by National CDM Board
7 Improving kiln efficiency in the brick making industry in Bangladesh; IIIDFC	Programmatic CDM: 18 Hybrid Hoffman Kilns will be brought under the CDM project. 246,895 tons of CO2 will be reduced over 9 year crediting years. DNA approval: 01.04.2010	Approved by National CDM Board
8 Efficient Lighting Initiative of Bangladesh (ELIB); REB, DESA, DESCO, PDB	12 million CFL have been distributed DNA approval: 01.04.2010	Approved by National CDM Board

Where have all our vultures gone?

Removing diclofenac from veterinary practice and constructing more captive breeding centres are the only ways to save these birds which play such an important role in the environment.

DR MD LUTFOR RAHMAN AND CHRIS BOWDEN

THREE species of vultures endemic to South Asia including Bangladesh, oriental white-backed vulture (*Gyps bengalensis*), long-billed vulture (*G. indicus*) and slender-billed vulture (*G. tenuirostris*), are listed as being threatened with extinction after rapid population declines in this region. Populations of three Gyps vulture species in parts of their ranges in South Asia fell by more than 95 percent in the 1990s, and all are now classified as Critically Endangered. Unless major steps are taken, all three species could soon be facing extinction. The white-rumped vulture -- once the most populous large bird of prey -- is under particular threat, having declined by 99.9 per cent. During the 1980s the oriental white-backed vulture was so abundant in this region that it was probably the most common large bird of prey in the world. More than 97 per cent of vultures have disappeared from this region's skies in the past 15 years -- the fastest decline ever recorded in a bird population anywhere in the world. Only about 10,000 still exist in the wild in the sub-continent, down from tens of millions in the 1980s.

When South Asia's vulture numbers began to plunge in the mid-1990s,

researchers were mystified. By the time the cause is identified -- widespread use of diclofenac, a non-steroidal anti-inflammatory drug that had become a popular treatment for ailing livestock to ease pain. Vultures in Bangladesh are on the verge of extinction because this drug is still being used to treat suffering cattle. The endangered birds eat the remains of the drugged animals and suffer kidney failure and visceral gout, which are usually fatal. When numbers of the bird crashed to a few thousand across the entire subcontinent the impact was dramatic. Rotting carcasses stunk up the villages and towns, incubating disease. Populations of feral dogs scavenging on the meat bonanza exploded, and the dogs also spread diseases, including rabies. Vultures' culinary tastes have given them a sinister reputation but they perform a crucial role. When an animal dies, it becomes a breeding ground for all sorts of pathogens. The vultures used to eat off the animals before bacteria and fungus could develop, preventing the spread of rabies, anthrax and many other diseases.

While the research shows that there is still widespread availability of diclofenac after the ban, encouragingly it also shows an increase in meloxicam (found in 70 per cent of pharmacies). There is also evidence that untested drugs such as nimesulide are more widely available in the market. The effects these drugs have on vultures are yet unknown. Ketoprofen, an alternative to diclofenac, is now illegal to

import, manufacture, retail or use diclofenac for veterinary purposes but the continued presence of residues of the drug in animal carcasses must have therefore been caused by illegal veterinary use. Pharmacies often dispense both human and veterinary medicines, in which case their holding stocks of human diclofenac is not an offence, a study found run by RSPB (Royal Society for the Protection of Birds).

To provide a safer environment for vultures in South Asia, scientists recommend reducing the size of vials of diclofenac meant for human use, increasing the costs, and taking action against pharmaceutical manufacturers and pharmacies flouting the diclofenac ban. The drug was banned five years ago in India, Pakistan and Nepal in 2006, but pharmacies continue to sell it illegally to treat suffering cattle, a study published in 2011 International Journal, Oryx, has revealed. Lead author and principal conservation scientist at the RSPB, Dr Richard Cuthbert, stated: "The ban is still quite easy to avoid because human formulations are still freely for sale in large vials which are convenient for use on large animals like cattle and clearly not suitable for human use.

Preventing the misuse of human diclofenac for veterinary use remains the main challenge in halting the decline of endangered vultures." While the research shows that there is still widespread availability of diclofenac after the ban, encouragingly it also shows an increase in meloxicam (found in 70 per cent of pharmacies). There is also evidence that untested drugs such as nimesulide are more widely available in the market. The effects these drugs have on vultures are yet unknown. Ketoprofen, an alternative to diclofenac, is now illegal to

import, manufacture, retail or use diclofenac for veterinary purposes but the continued presence of residues of the drug in animal carcasses must have therefore been caused by illegal veterinary use. Pharmacies often dispense both human and veterinary medicines, in which case their holding stocks of human diclofenac is not an offence, a study found run by RSPB (Royal Society for the Protection of Birds).

To provide a safer environment for vultures in South Asia, scientists recommend reducing the size of vials of diclofenac meant for human use, increasing the costs, and taking action against pharmaceutical manufacturers and pharmacies flouting the diclofenac ban. The drug was banned five years ago in India, Pakistan and Nepal in 2006, but pharmacies continue to sell it illegally to treat suffering cattle, a study published in 2011 International Journal, Oryx, has revealed. Lead author and principal conservation scientist at the RSPB, Dr Richard Cuthbert, stated: "The ban is still quite easy to avoid because human formulations are still freely for sale in large vials which are convenient for use on large animals like cattle and clearly not suitable for human use.

Preventing the misuse of human diclofenac for veterinary use remains the main challenge in halting the decline of endangered vultures." While the research shows that there is still widespread availability of diclofenac after the ban, encouragingly it also shows an increase in meloxicam (found in 70 per cent of pharmacies). There is also evidence that untested drugs such as nimesulide are more widely available in the market. The effects these drugs have on vultures are yet unknown. Ketoprofen, an alternative to diclofenac, is now illegal to

been reached in the race to save these birds from extinction. We need to create local conservation groups to lobby governments and raise awareness in Bangladesh, to make sure the diclofenac ban is effective in time to prevent total extinction so that in 10 or 15 years' time, we can re-introduce the captive birds to a safer world. Until diclofenac stops being used for cattle in Bangladesh these birds need to be bred in captivity, to be released only when it is safe for them in the wild once more. We need also to support our conservation partners, showing farmers that there are alternative drugs to diclofenac that are just as effective in treating cattle.

There is still a lot more to do to prevent equally dangerous human diclofenac formulations as well as other untested veterinary drugs, being used in

its place. The effect of this drug on birds of prey remind us of the devastating impact of the pesticide DDT on birds worldwide. It took years for governments to remove DDT from use. Diclofenac is so devastating that we do not have many years if our threatened vultures are to be saved. Removing diclofenac from veterinary practice and constructing more captive breeding centres are the only ways to save these birds which play such an important role in the environment.

Dr Md Lutfor Rahman is a research ornithologist, International Wildlife Consultants Ltd, Carmarthen, Wales, UK. E-mail: lutfor.rahaman@falcons.co.uk

Chris Bowden is International Species Recovery Officer & SAVE Programme Manager, Royal Society for the Protection of Birds (RSPB), The Lodge, Sandy, UK. E-mail: chris.bowden@rspb.org.uk

