Increasing access to the carbon market





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New Countries, New Sectors

World events in 2008 have substantially altered the global financial landscape. What that means for energy and carbon finance remains unclear. While markets, including the carbon market, slowly reshape themselves, the science of climate change continually improves, and governments continue to move towards a new agreement to replace the Kyoto Protocol.

As one of the leading UN agencies on action to address climate change, the United Nations Environment Programme (UNEP) is implementing a new climate change strategy with a focus on supporting countries in moving towards low carbon and climate resilient development, a strategy that includes carbon markets and the Clean Development Mechanism (CDM) as strong components. This effort is being led by the Paris-based Energy Branch.

The UNEP Risoe Centre (URC) for Energy, Climate and Sustainable Development is supporting the implementation of many of UNEP's activities related to carbon finance and the CDM through URC's Energy and Carbon Finance Program. As a core thematic focus within URC, the Energy and Carbon Finance Program helps developing countries pursue development objectives using carbon finance to promote renewable energy and energy efficiency, commonly referred to as 'sustainable energy'.

URC is playing a crucial role in providing support to a large number of developing countries to strengthen their participation in the global carbon market. This is being done through a number of interlinked analytical and capacity development programs, supporting the establishment of national CDM institutions, and improving institutional capabilities for the identification, design and implementation of projects that reduce carbon emissions. URC's capacity development programs focus on activities at the country level to enhance a more equitable regional distribution of carbon project activities.

The CDM has developed rapidly, with approximately 120 new projects entering the pipeline every month. As of October 2008, 4000 projects were in the CDM pipeline, with a cumulative 2.8 billion certified carbon credits expected by

2012. As a result of this dynamic development, the CDM has mobilized investments worth billions of dollars in a very short period of time.

With the CDM in the process of evolving from being only a project-based mechanism to including programmes and maybe policies, the need for new types of capacity development is growing in parallel. With a dynamic carbon market under constant development, the Energy and Carbon Finance Program continuously analyses market barriers, the actions needed to overcome them, and ways to strengthen emerging CDM sectors.

The main activities of the Energy and Carbon Finance Program include:

- Regulatory advice and the development of institutional capacity;
- Targeted, hands-on training and technical workshops;
- Knowledge and information management;
- Research, policy analysis, and market surveillance:
- Supporting the development of national CDM portfolios: early-stage project identification, definition, and development;
- Investment mobilization support, such as hosting the CDM Bazaar, organizing regional carbon fora, financial sector intermediation, and supporting CDM websites and investors' guides
- Promotional and educational events for national, regional and international groups.



The CDM and Sustainable Development

Community benefits may arise directly from a CDM project itself, such as village electrification, improved air quality, or increased employment and income. These benefits may be also structured as an "add on" to a project where carbon revenues help to pay for basic social services or infrastructure, such as schools or irrigation, for riparian communities.

For example, URC is collaborating with two sisal producers in Tanzania under the CD4CDM project to channel investment into technologies with environmental and local economic benefits for rural areas, including the replacement of chemical fertilizers with quality organic fertilizers for farming activities. In the Tanzanian project, biogas will be captured from 1000 tonnes of daily sisal fibre processing wastes that are currently landfilled and used to generate electricity for surrounding communities and workers.

The Felou Regional Hydropower Project is another project with substantial carbon reduction and community benefits. The sixty-megawatt run-of-river hydroelectric plant being constructed on the Senegal River two hundred kilometres downstream of the Manantali Dam will deliver clean, low-cost electricity to consumers in Mali, Mauritania and Senegal while offsetting over 650,000 tons of greenhouse gas emissions. This sub-regional CDM project was initially supported through the Carbon Finance for Sustainable Energy Services in Africa (CF-SEA) by UNEP and URC, in cooperation with the World Bank's Community Development Carbon Fund in five countries.

Expanding the Carbon Market

URC is helping to expand the carbon market through interventions that diversify projects, including new sectors and new countries.

Agroforestry

With deforestation accounting for almost a quarter of global greenhouse gas emissions, UNEP has launched a project to promote CDM in the agricultural and forestry sectors in the Sub-Saharan African countries of Benin, Cameroon, DRC, Gabon, Mali and Senegal. *CASCADe*, or *Carbon Finance for Agriculture, Silviculture, Conservation and Action against Deforestation*, is funded by the French Global Environment Facility and implemented in partnership with CIRAD – the French Agricultural Research Centre for International Development – and ONFI, the international arm of the French National Forestry Office.

Introductory training workshops have successfully been completed in Cameroon, DRC, Gabon, Mali, Madagascar and Senegal, with dozens of project developers in attendance at each workshop. National selection processes have been launched and will be completed by the end of the year to identify projects for individual technical support. Projects submitted for support vary over a wide array of activities, including bioenergy, cogeneration, reforestation, and mangrove and forest conservation.

In each participating country, CASCADe builds on past or current work being developed by various stakeholders while pursuing collaborations with other organistations, particularly to validate agricultural, bioenergy and forestry CDM projects and develop national framework policies.

Biofuels and Biomass

Despite the growing interest in promoting a rapid uptake of modern bioenergy for sustainable development and the CDM to help finance this goal, the current CDM pipeline has few projects in the bioenergy portfolio. Although bioenergy projects are numerous as a whole, there is still an almost complete lack of CDM projects involving liquid biofuels in the transport sector, or the displacement of fossil or non-renewable biomass energy in favour of renewable biofuels in the household sector.

URC and the UN Conference on Trade and Development (UNCTAD) are working with Climate Focus and the Joanneum Research Institute on a research project to address the main challenges involved in developing biofuel CDM projects, to promote a more equitable geographical distribution of CDM projects, and to increase opportunities for least developed countries to participate in the global carbon market.

This study presents an overview of the key issues in biofuel economics and of tools to conduct feasibility studies for potential bioethanol and biodiesel projects. In addition to financial constraints, a number of challenges associated with the development and approval of methodologies for biofuels are identified, with recommendations for overcoming them.

Finally, the study provides a road map to advance long-term investments in bioenergy CDM projects, such as adjusting methodologies for compliance, developing viable business models for selected pilot projects and protocols for biofuel trade, and special monitoring requirements for increasing cross-border consumption. The results of the study will be published during the first quarter of 2008.

Using *biomass* from straw, manure and municipal wastes to supply energy is a promising area with the multiple benefits of eliminating local pollution, reducing GHG emissions, providing clean energy and increasing income for farmers. Three Danish organisations and the Chinese Energy Research Institute are investigating ways to use biomass under the *China Biomass CDM Capacity Building Project*. Project activities include a survey of the biomass resources in China, examining the advanced technologies for biomass use in Denmark, local CDM training capacity-assessment, biomass CDM training and project management, and biomass technology training in three provinces; and developing at least four biomass CDM projects in each province.

Buildings

URC's work to increase *energy efficiency in the build-ing sector* is part of a new research initiative to develop approaches to engage under represented sectors in the CDM. Although the building sector accounts for 30% to 40% of global energy consumption and 20% of CO₂ emissions, until now the CDM has not captured the sector's emissions reduction potential due to a number of barriers.URC has conducted a review of building sector CDM projects under the private-sector partnership programme of UNEP's *Sustainable Building and Construction Initiative (SBCI)* to identify barriers to energy efficiency in buildings and measures to overcome them.

The project team from URC investigated four CDM projects in the pipeline and interviewed experts in the areas of CDM, energy efficiency, financing and buildings in three host countries (India, Brazil, and South Africa). The study proposed a number of recommendations on baseline, methodologies, additionality issues, and rule changes to facilitate building-sector CDM projects.

The recommendations also include a post-2012 proposal for the development of sectoral standards and an extended project-based crediting mechanism to foster a full-scale adoption of energy-efficiency technologies in the building sector in the developing countries. The result of this research is supported by the SBCI Climate Change Think Tank, and has been published by UNEP in November, 2008 under the title: "The Kyoto Protocol, the Clean Development Mechanism and the Building and Construction Sector". The report is downloadable from www.unepsbci.org and www.uneprisoe.org.



Programmatic CDM

The *Programmatic CDM in China* project concluded in July 2008. The project investigated ways to introduce and implement P-CDM in China that can fully unlock the immense potential of CDM there.

Funded by Denmark and jointly implemented by URC, the Chinese Academy of Social Sciences, Tsinghua University and a local CDM consulting company, AGET, the project supported the development of three P-CDM projects, and found potential for P-CDM in China around solar thermal heaters, biogas digesters and energy efficiency. A booklet, *Programmatic CDM: a Study on Institutional Framework and International Developments*, was published in Chinese in May 2008.

Capacity Development in Least Developed Countries

A consistent objective of UNEP's CDM work is strengthening the regional distribution of CDM projects, with activities focused on middle-income and Least Developed Countries (LDCs).

CD4CDM in Bangladesh

Bangladesh was one of the countries chosen in the second round of *the CD4CDM project*.

The first national workshop was held in Dhaka during April 2008 and the CD4CDM country team is now preparing eight Project Identification Notes (PINs) to be completed by the end of November 2008, with renewable energy and landfill gas having the best prospects. The second training workshop is expected to take place in the first quarter of 2009.

The Green Facility

The Green Facility is a multi-year CDM capacity development programme in Sub-Saharan Africa funded by the Danish International Development Assistance (Danida). It covers both anglophone and francophone countries, including Benin, Burkina Faso, Ghana, Mali, Niger and Zambia. The programme is currently in its first phase, running from 2008-09. It includes the provision of hands-on, practical capacity building workshops for relevant CDM stakeholders, the development of national CDM project portfolios of projects in the PIN and Project Design Document (PDD) stage, and support for the operationalization of the Designated National Authorities (DNA). The programme should result in an increased number of CDM projects in the pipeline from the participating countries and improve their capacity for developing and hosting CDM projects.

In Mali, the *CDM Green Facility* will further strengthen human and institutional capacities to design and implement CDM projects. The CDM Green Facility builds on previous UNEP project interventions and is facilitating up to four additional CDM projects in Mali's energy and waste management sectors. A "gap analysis" study is also being undertaken to identify legal and regulatory reforms conducive to public and private participation in the CDM, complemented by targeted training for the CDM national authority and awareness-raising activities more broadly.

URC also assisted the GtZ's Climate Protection Program in the *design of a regional training programme* in five least developing countries in Francophone Africa (Benin, Burkina Faso, Mali, Rwanda and Senegal). The programme helps to build technical skills in CDM project preparation at a sophisticated level among prospective project proponents in the energy sector identified during a scoping phase of the project, as well as consultants and service providers. URC also co-sponsored training with GtZ and the World Bank on the CDM validation process for a similar group of participants that took place in Dakar in April 2008.

Capacity Development for Multilateral Environmental Agreements

URC will be initiating new country activities through the forthcoming UNEP programme on Capacity Development for Multilateral Environment Agreements for African, Caribbean and Pacific (ACP) countries funded by the European Commission (EC). The rapidly expanding market for carbon and ecosystem services may increase the flow of finances and sustainable technologies to ACP countries, and the new programme will provide support to 10 to 12 countries in these three regions and include other countries through regional training efforts.

Increasing Investment, Helping the Finance Sector

The limited ability of CDM project proponents to secure financing, particularly in the least developed countries, is often due to limited or no knowledge of CDM procedures and rules by project proponents and intermediaries. Moreover, approaches, tools and skills to appraise CDM projects are often lacking, which means developing-country financial institutions are unable to evaluate properly the risks and rewards associated with investing in or lending to developers undertaking CDM projects. To address these and other barriers, URC undertakes a number of activities, described below.

Training the financial sector in carbon finance and CDM

The African Bankers' Carbon Finance Investment Forum, held in May 2007 in Johannesburg, was organised by UNEP in collaboration with the Development Bank of Southern Africa and the World Bank and involved support from a number of bilateral donors. It convened approximately 175 experts from all parts of the region with a focus on Anglophone countries. For the first time, between thirty and forty different finance institutions from the region had a chance to be exposed to this new market opportunity, and the Forum facilitated "carbon entrepreneurs" from across Africa to present more than three dozen concrete project proposals to carbon buyers and financiers. This demonstrated Africa's potential and innovation, showcasing projects ranging from using coffee husks to replace fossil fuel in cement production in Kenya, capturing and utilizing methane gas from Lake Kivu in Rwanda, piping West African natural gas to replace coal-fired electricity in South Africa, and a host of reforestation and forest management activities.

URC co-sponsored the first *West Africa Carbon Finance Investment Forum for Financial Institutions* held in February 2008 in Dakar. In addition, UNEP facilitated a session on carbon finance for African financial institutions in Lagos at a round table on sustainable finance organized by UNEP, FI and Citibank.

Financing guidebook

URC collaborated with EcoSecurities during 2007 to produce the Guidebook to Financing CDM Projects. The Guidebook provides information, helps CDM project-developers locate financing, and demonstrates typical approaches and methods for appraising the viability of CDM projects and integrating carbon revenue into overall project financing.

The target audience is primarily CDM project proponents in developing countries, including utilities, private and public-sector entities, municipalities, and other specialized consultancies and intermediaries, credit officers and other decision-makers within banking institutions, and financial intermediaries in developing countries.

The guidebook can be downloaded from www.cd4cdm.org

Knowledge and Information Resources



Forthcoming publications will address programmatic CDM and CDM post-2012 issues.

URC's knowledge and information resources include guidebooks, reports, working papers, a *Perspectives* series, a platform to share information and data analyses. All publications can be downloaded from http://cd4cdm.org/publications.htm.

P-CDM Guidebook

URC is developing a *Primer on Programmatic CDM* in collaboration with international experts for launch at Carbon Expo 2009.

With five Programmes of Activities (POAs) in the CDM pipeline, all in the validation process, the Programmatic CDM (P-CDM) is starting to function. However, the adequate management of issues such as sampling, ownership structure and program monitoring pose big challenges to the success of P-CDM. A number of other issues are also acting as barriers, including:

- Interpretation of P-CDM and some misconceptions regarding methodology;
- Designated Operational Entities (DOEs) being reluctant to validate POAs due to liability issues; and
- A lack of initiatives by potential institutions to coordinate activities under the programmatic CDM.

To cover this gap a clear step by step guidebook is needed to enable the sound origination of projects under a programmatic scheme. The UNEP Risoe Centre, in the framework of the CD4CDM project, is developing a guidance document that will be addressed to CDM project developers, carbon financiers and other interested stakeholders.

Perspectives 2008

A Reformed CDM — Including new Mechanisms for Sustainable Development, is the title of the 2008 edition of the CD4CDM Perspectives Series, exploring how the CDM can be reformed in a post-2012 climate regime. A Reformed CDM is targeted at negotiators attending COP-14 in Poznan and is a response to CDM weaknesses that impair its usefulness both as a financing instrument and as a contribution to sustainable development. In total, seventeen authors from the private sector, DNAs, the Executive Board, research and development agencies cover important issues falling under four overall topics for CDM post-2012, including sustainable development and equity, institutional reforms, the expansion of project categories, and scaling-up mitigation.

The first *Perspectives* was issued in 2007 with the title "Equal Exchange: Determining of a Fair Price for Carbon". The 2007 and the new 2008 editions can be downloaded from *www.cd4cdm.org/publications.htm*



Database

The *CDM/JI Pipeline Analysis and Database, www.cdm-pipeline.org,* contains the most comprehensive international collection of information on the rapidly developing carbon market, including all CDM/JI projects sent for validation, information on baseline & monitoring methodologies, a list of DOEs, and a comprehensive analysis of the state and trends of CDM/JI markets.

As of 1 October 2008, the CDM Pipeline held 3967 CDM projects, including 1170 that had been successfully registered. A total of 195 million Certified Emissions Reductions (CERs) have been issued, a success rate of 96% from registered projects. Recent improvements to the CDM Pipeline include:

- Project distribution within host countries by region and type;
- Adjustment of the expected and available number of CERs in 2012 and 2020 for success of validation; and
- Inclusion of new track 1 projects in the pipeline.
- A new sheet showing all PDD consultants

Virtual Information Sharing Platform

The UNFCCC CDM Bazaar (www.cdmbazaar.net) is a free-of-charge platform for CDM market participants, including emissions reductions buyers and sellers, and technology/service providers. Launched by URC and the Secretariat for the United Nations Framework Convention on Climate Change (UNFCCC), the "virtual" CDM Bazaar acts as a

market place for CDM project participants, allowing them to exchange information on CDM investment opportunities, emissions-reductions purchase programmes and services provided to market stakeholders.

The UNFCCC CDM Bazaar currently has over 1200 registered users from 70 different countries who can upload information to the website to facilitate emissions-reductions market transactions. For example, a project developer in Mauritius, Paraguay or India can upload a CDM PIN with the objective of receiving, for example, offers from Certified Emissions Reductions buyers and/or technology providers. Similarly, an emissions-reduction purchasing programme intended to procure emissions reductions from potential project developers can post information about the terms and conditions of the programme.

The user-driven UNFCCC CDM Bazaar has sections for:

- Sellers, and their CDM projects at all stages of development, targeting buyers, financial assistance or technology and services.
- Buyers, and their requirements/interests in particular project types or needed Certified Emissions Reductions.
- Service providers, and details of the services or technologies they bring to the market.
- Announcements, with information on employment opportunities, events and publications related to the carbon market.

Training and Regional Activities in Latin America

URC's *in-country and regional CDM activities* include workshops and training sessions targeted to a country's specific needs. URC facilitates the exchange of information and experiences from different regions and sectors.

In **Peru**, for example, three regional CDM workshops were organized for industries (sugarcane, foods and beverages, agriculture, etc), municipalities and regional authorities in the north, south and central regions. This strategy is a response to the need for the inclusion of more sectors, the diversification of the country's CDM portfolio, and mapping the potential for regional and/or national programmatic CDM.

To support the legislation for CERs in Peru, the CD4CDM Project conducted studies in collaboration with Fundación Bariloche to help formulate the benefits and basis for a strategic CDM promotion, and the treatment of CERs in Peru, and to explore possible mechanisms from other countries that have funded their DNA institutional framework.

In Nicaragua, selected sector experts and project participants were trained in workshops on formulating PINs and PDDs. Due to the potential and prospects in the country for programme-based activities, a two-day training workshop on P-CDM was held in Managua in June 2008. Since rural development is one of the national priorities (60% of the rural population of Nicaragua do not have access to electricity), the workshop was aimed at selected experts from prioritised sectors: energy (renewable, efficiency, rural electrification), biomass, agro-industries and municipalities. Project ideas were discussed with small and medium farmers and municipalities willing to have access to the carbon market through programmatic CDM.

Although **Surinam** is a CDM "late mover", the country is preparing to host CDM projects and to participate in the carbon market. Like other small economies in Latin America, CD4CDM is helping Surinam to develop its local capacities. While securing the establishment of the institutional arrangements for the CDM, the CD4CDM country team is promoting project development among the public and private sectors with CDM potential. Climate Focus from the Netherlands is providing technical assistance to the country team.

Two national workshops have been successfully organized by November 2008, including the identification of project



ideas. The local CD4CDM team, in collaboration with Climate Focus and URC, will further develop projects, including energy production, from:

- Gasification of rice husk in the Nieuw Nickerie district (6 10 MW);
- Gasification of domestic waste in Paramaribo;
- Direct incineration of rice husk in Nickerie district;
- Increasing capacity of the Afobaka hydro power plant through diversion of the Tapahony river and the Jai creek (100 – 200 MW)

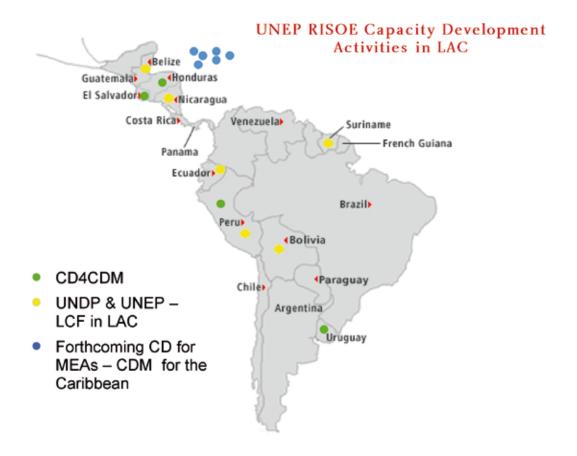
Co-sponsored CDM workshops in the Caribbean

In addition to CD4CDM participating countries in Latin America, URC has been collaborating with the Latin American Energy Organization (OLADE), co-sponsoring CDM workshops in Cuba, Jamaica, Barbuda and the Dominican Republic. The workshops include general information and awareness of the CDM for the public and private sector, as well as more specific training sessions for different prioritized sectors.

The Latin American Carbon Forum

The Latin American Carbon Forum is a knowledge and information sharing partnership between the UNEP Risø Centre (URC), the Latin American Energy Organization (OLADE), the International Emissions Trading Association (IETA) and the World Bank Institute (WBI).

For the third consecutive year, during October, the Latin American Carbon Forum in Santiago, Chile, attracted more than 1000 participants stakeholders active in the regional and global carbon market, including project owners and developers, National CDM Offices and Investment Promotion Agencies, CDM governance bodies, carbon market intermediaries and service providers. Presentations from the three events can be seen at (www.latincarbon.org).



Partnering with other UN offices

Since the launch in Kenya of the Nairobi Framework to increase support for African countries to participate in the CDM, URC has supported efforts in seventeen African countries, of which eleven are LDCs.

Also under the Nairobi Framework, the first African Carbon Forum was convened in September 2008 in Dakar, Senegal. The Forum combined a carbon-investment Trade Fair, a conference and policy forum for DNAs and government officials, and targeted capacity-building on the CDM. UNEP co-organized the event together with the Senegalese Government, the UNFCCC Secretariat, the World Bank, UNDP and the International Emissions Trading Organisation (IETA). UNEP contributed very actively to the programme and funded more than thirty CDM project proponents from across Africa, who showcased their projects to interested government and private-sector investors.

The convening of the Forum reflected the fact that African countries are ready to present a significant number of CDM projects and that countries in this region are ready to engage in carbon finance.

The UNDP/UNEP CDM Capacity Building Project

The project focuses on six countries in the South and East Africa regions of Sub-Saharan Africa. The initiative is being funded by Spain, Sweden and Finland and forms part of the "UNDP–UNEP Partnership on Climate Change" to optimize and unify the activities of both organizations in the area of CDM capacity-building and adaptation. The Project also forms part of the UNDP/UNEP contribution to the Nairobi Framework to expand the geographical reach of the CDM.

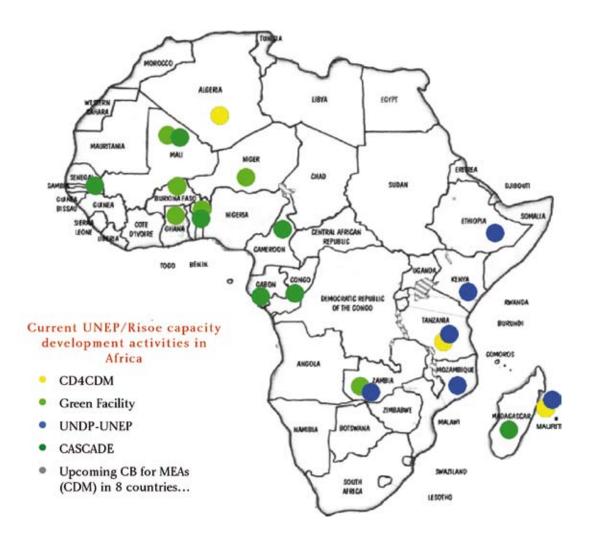
The project enhances public- and private-sector capacity to access carbon finance, and to overcome barriers to carbon markets in sub-Saharan Africa. The project reviews existing institutional and regulatory frameworks in the countries concerned and identifies capacity gaps in the public and private sectors in respect of a 'carbon-enabling' frame-

work that can attract commercial carbon finance under the CDM or voluntary carbon markets. In addition, a unique feature of the 'regional cluster' approach is to enable the cost-effective delivery of capacity development services and the promotion of South-South technical exchanges between participating countries. UNDP's Millennium Development Goal (MDG) Carbon Facility is expected to contribute positively towards an important role in creating a concrete project pipeline in the sub-Saharan cluster.

Leveraging Carbon Finance for Sustainable Development in Latin America and the Caribbean

Another UNDP and UNEP carbon finance capacity building project will initially focus on four countries in Latin America and the Caribbean (El Salvador, Honduras, Peru and Uruguay).

The objective of the project is to enhance public and private-sector capacity to access carbon finance, and to overcome barriers impeding the take-off of a carbon market in Latin America and the Caribbean. Pursuing the same objectives as the African one, the Latin American project will provide the necessary market 'push' that will allow for a continuous flow of carbon finance resources to the selected countries. A major feature of the project is to enable the cost-effective delivery of capacity development services and the promotion of South-South technical cooperation between countries. UNDP's MDG Carbon Facility will play an important role in creating a concrete project pipeline.





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