



Annex 6

REGIONAL DISTRIBUTION OF CDM PROJECT ACTIVITIES: ADDRESSING THE BARRIERS

Summary

1. This paper represents a further contribution to addressing the issue of inequitable geographic distribution of CDM project activities, responding to the request of the Board at its 30th meeting.
2. The paper notes the five groups of barriers and recommendations previously identified and submitted to COP/MOP by the Board and then presents possible activities to address the barriers and to further build upon those recommendations. These actions are grouped under the following headings consistent with the Board's submission to COP/MOP2: financial issues, structural and institutional issues, CDM specific capacity issues, CDM process issues, uncertainty, cooperation/coordination, and information sharing.
3. The paper then examines the types of projects, and their respective methodologies, that might be suitable under the CDM for the countries currently with little or no participation, using projects already in the official CDM pipeline as examples of the potential. Starting with relatively extensive suggestions for sub-Sahara African countries, this section continues with briefer examination of the (largely similar) potential in Least Developed Countries (LDCs) and Small Island Developing States (SIDS).
4. The paper concludes that there is significant potential for these three groups of countries in the areas of: renewable energy (biomass, wind, solar, geothermal), fuel switching (biomass- and natural gas-based), energy efficiency, utilization of flared gas and sequestration. However, due to one of the barriers being the relatively small size of many of these types of project, new approaches (for example using programme of activities (PoAs)) may be needed to take advantage of this potential. LDCs and SIDS could benefit from the same project types, but their added urgent concerns for poverty alleviation (LDCs) and adaptation (both groups) would best factored into the planning of CDM projects.
5. Further, many of the methodologies in the areas identified for CDM potential in these groups of countries may have already been developed, and improved, by project participants through the CDM process. While most of the approved methodologies are suitable to be used in PoAs, for example, it may be that the awareness of the applicability of these methodologies needs to be raised and their use explained and or simplified through workshops, handbooks and various tools to be more user-friendly. Moreover, the approval of PoAs and bundling of project activities within these programmes should result in a wider application of particular methodologies, lower the associated transaction costs and provide for greater understanding of the CDM potential in these countries.
6. The paper concludes with a section indicating that some activities to address some of the barriers in some of the currently disadvantaged CDM countries have been undertaken. However, this is not sufficient in terms of geographic or sectoral coverage. Neither is it sufficient in terms of the scope of assistance given or the means in which assistance is delivered. There is a need for enhanced coordination among donors and development agencies, as well as a more holistic and longer-term delivery of assistance. Increased information exchanges, supplemented by possibly even more detailed data on the unique socio-political barriers facing potential stakeholders in each country, and coordination through the DNA forum, for example, should also contribute to further addressing the equitable distribution of the CDM, along with other activities such as the CDM Bazaar and the Nairobi Framework (http://cdm.unfccc.int/Nairobi_Framework/index.html).



Appendix I

REGIONAL DISTRIBUTION OF CDM PROJECT ACTIVITIES: ADDRESSING THE BARRIERS

I. Mandate

1. The Board at its 30th meeting¹ requested the secretariat to prepare a paper, which includes an analysis of how the barriers identified by the Board in its recommendations to COP/MOP2 could be addressed and an analysis of the type of projects and methodologies that could be more suitable for regions with limited participation in the CDM, particularly in Africa, SIDS and LDCs. The Board will consider this paper at its thirty-second meeting with a view to developing possible tools, such as manuals, to help these countries stimulate more CDM project activities.

II. Barriers

2. By its decision 7/CMP.1 (paragraph 33), the COP/MOP requested the Board to report to it, at its second session, information on systematic or systemic barriers to the equitable regional and sub-regional distribution of CDM project activities, and options to address these issues.

3. Annex III of the Board's report to COP/MOP2² acknowledged the existence of barriers to the equitable distribution of CDM project activities at different levels and different stages recognizing that they also needed to be addressed at different levels: some by the Board itself, others by Parties, and yet others by the public and private sectors in countries. The annex further recognized that some measures had already been taken by the Board to alleviate some of the concerns about the inequitable geographic distribution of CDM project activities. The following groups of remaining barriers were then listed:

- **Financial issues** - Insufficient access to funds for technical assistance and capacity building and insufficient access to project finance and risk management tools
- **Structural and institutional issues** - Weak institutional and administrative capacity relating to the development of CDM project activities
- **CDM specific capacity issues** - Lack of CDM-related awareness and experience in relevant sectors, investment conditions and small size of projects
- **CDM process issues** - Facilities and procedures not being in place, complexity of processes and methodologies, insufficient guidance on bundling and size limit of bundles, and lack of clarity with regard to the relationship of official development assistance involvement in the project cycle
- **Uncertainty** - the role of CDM post 2012.

III. COP/MOP 2 recommendations

4. Further, in Annex III, Section V of the report to COP/MOP2, the Board presented the following groups of recommendations³ for further consideration and guidance:

- **Financing and financial tools** - Financial facilities and tools to assist with start-up costs for CDM activities

¹ Paragraph 59, EB 30: Agenda sub-item 5 (c): Regional distribution of project activities

² FCCC/KP/CMP/2006/4/Add.1 (Part I)

³ Ibid Ref 2



- **Capacity building and training** - Specific to the CDM and its institutions
- **Co-operation** - Exchange of experience and increase in co-operation at all levels, including regionally, bilaterally and among DNAs
- **Involvement of other stakeholders** - Increase of DNA coverage and involvement of industry and financial institutions from host countries and regions as well as increased synergy between organizations providing CDM assistance, and
- **Sharing of information** - Requested the UNFCCC secretariat to facilitate the sharing of information on the CDM.

5. In decision 1/CMP.2, Parties, while welcoming efforts to date, including the announcement of the Nairobi Framework, emphasized that further efforts are necessary to promote equitable regional distribution of CDM project activities and encouraged Annex I Parties to consider providing further assistance, NAI Parties to engage in South–South cooperation, financial institutions and the private and public sectors to consider further options for investment, and holding additional DNA forums.

IV. Activities

6. The Board, at its 30th meeting requested the secretariat to analyze how the barriers listed above could be addressed. This section presents suggestions for further consideration by the Board, following the same groupings as in the previous two sections.

7. **Financial issues** - There is a need to obtain funding to support the development of CDM documentation and related processes, as well as to finance the underlying projects. To the extent possible, national resources should be encouraged and sourced from the private financial, business and industrial sectors. However, in the target countries this may still leave a gap significant enough to hinder the development of CDM projects, so new and innovative means of financing should be developed. Some suggestions for activities to address this barrier are:

- Develop a revolving fund for CDM project development
- Develop a venture capital fund to finance the underlying projects
- Improve financial flows through investor forums
- Assist in establishing linkages and working relationships with financial institutions.

In addition, projects could be promoted and investments mobilized through:

- Development of national CDM catalogues/investor guides
- The CDM Bazaar
- Having a stand at various carbon events.

Some actions need to occur at the national level while others would best be addressed by the international community (either regional or interregional).

8. **Structural and institutional issues** - There are a number of barriers related to institutional issues in the CDM and the following CDM-specific activities are proposed to address these barriers by enhancing the capacity of DNAs and addressing related legal issues:

- Assistance in establishment and operation of a national CDM committee
- Help in organizing other types of dialogue sessions/national workshops with stakeholders



- Assisting the national authorities to incorporate the Kyoto Protocol into national legislation (beyond simple ratification) through mobilizing and involving various arms of government, as well as undertaking policy/legislative reviews and interventions
- Developing the associated legal framework by:
 - Advising the (designated) DNA
 - Preparing background papers/studies/draft documents
 - Identifying/preparing sustainable development criteria
 - Preparing a national CDM Strategy
 - Holding legal seminars
- Emissions monitoring facilities (this should include trained technicians with quality control skills and well-equipped laboratories)
- Training on issues related to becoming an accredited operational entity (for those countries/institutions with such aspirations).

9. In addition to the above, there are related issues that would need to be addressed or further investigated, in some cases to assist in establishing a national institutional framework that would further 'enable' the CDM. This group of tasks consists of:

- Mobilization of the public and private sector to establish suitable investment and financial frameworks with associated incentives and fiscal instruments
- Promote an active national innovation/technology support system to help incoming technologies to thrive, that would also encourage replication or adaptation to national circumstances
- Develop national information systems/web sites for stakeholders within the country as well as interested parties from abroad
- Training on developing policy instruments for an enabling environment
- Arranging for dispute settlement facilities in case there are disagreements among CDM project partners
- Reviewing duties and taxes as extra encouragement for investment
- Establishing incentives as extra encouragement for investment
- Reviewing energy pricing/fuel subsidies that are often a disincentive for CDM projects
- Ensuring macro-economic stability as an added encouragement to investors
- Creating awareness/'mainstreaming' in other sectors of the economy and other line ministries
- Harmonizing policies within the country but also regionally/in sub-regions.

10. **CDM specific capacity issues** - As part of the promotion of the CDM in a host country, there may be a need for local persons, experts and/or institutions to act as 'CDM champions', for showcasing successful cases (whether countries, projects or PoAs) as well as for trained CDM professionals in both the public and private sector.

11. There will be a significant amount of training for the public sector during activities that address institutional barriers, but this group as well as the private sector will require specific training



on the issues and processes related to the CDM project cycle. This could be achieved through a 'learning-by-doing' process, assistance in the identification of suitable CDM opportunities, and in the development of one or two sample projects where start-up financing could also be provided. This would include establishment and application of baselines, contract negotiations (technology agreements, PPAs, ERPA's etc.), and preparation of bankable project proposals.

12. **CDM process issues** - Annex 19 of the EB 27 report made the following recommendations in relation to other actions that may be taken in support of increasing the geographical distribution of CDM project activities:

- Preparation and distribution of publications, manuals and tools
- Assistance in developing methodologies specific to the target countries
- Assistance in developing programmatic CDM frameworks specific to the target countries

13. **Uncertainty** - It should be clearly left to the Parties and the UNFCCC process to determine the future regime. However, an early resolution of this concern will certainly increase demand for and confidence in the CDM by carbon market players.

14. **Co-operation/co-ordination** - There are various ways in which these concerns can be addressed by the host countries, for example by:

- Holding regional DNA forums to extend outreach and networking
- Establishing regional networks that would include:
 - One or more regional centres of excellence/operations
 - A regional data base
 - A web portal for the national systems
 - Network/sub-regional meetings
 - A regional newsletter
- Developing an African emissions trading system to spur the development of a pro-active approach to fostering and marketing CDM projects from the region.

In addition, donors and development agencies could co-ordinate their capacity building activities for the recipient countries as already envisaged in the Nairobi Framework.

15. **Information sharing** - The UNFCCC Secretariat has been requested to develop a public awareness programme to facilitate the availability and sharing of information on the CDM process in NAI Parties. Apart from the development of national information/data collection management and exchange systems and those of other agencies, the Secretariat is establishing the CDM Bazaar (a web-based platform) to assist in disseminating information on CDM project opportunities. This facility will contain links to relevant material in other locations thereby acting as a web portal that provides access to relevant technical, promotional and educational material as well as to CDM tools. With the ever increasing number of approved CDM methodologies, further work on summary information, which could include easy to understand descriptions, example project scenarios, industries, plants, lands and applicability conditions, can be provided, to facilitate and raise awareness for those proponents who are investigating the potential of CDM for their operation.



V. Suitable CDM project types and methodologies

16. CDM projects, and their respective methodologies, are limited to a few countries in sub-Saharan Africa and are few in number compared to other regions. The LDCs and SIDS are at a similarly disadvantage.

17. Attached as Appendix II is a table that is indicative of the types of projects and methodologies that have already entered or passed through the official CDM pipeline and this shows that there are a few that recur, although there are variations in their mix and potential depending on local conditions in these countries and are essentially replicable (renewable energy [biogas, biomass, wind, hydro], landfill gas, demand side energy efficiency, electricity supply, transport) and that there are some that are likely to be found or replicated in only a few countries (N₂O, SF₆, large industrial energy efficiency, fossil fuel-based [gas flaring, coal mine methane] and fuel switching to natural gas).

18. While the table shows some of the CDM project types and methodologies that could be more widely developed in these groups of countries, there are other categories that have yet to be developed, e.g. afforestation/reforestation (A&R) and transport (fuel switching, bio fuels and public transport) project activities.

19. **Potential in sub-Saharan Africa** - Africa has a significant emission reduction potential in land use and agricultural practices, as these are activities that drive the majority of the African economies. However, apart from afforestation and reforestation, few opportunities currently exist under the CDM.

20. Africa also has considerable natural resource and energy potential, although much of the region's export revenue is devoted to importing fuel and other sources of energy. Considering the large percentage of the population without access to modern or efficient energy services, the CDM has the potential to support solutions to a number of the region's social and economic problems in line with the Millennium Development Goals (MDGs). This is even more critical as local community development initiatives can greatly improve livelihoods especially those that depend on natural resources.

21. The main groups of CDM opportunities are in the areas of:

Biomass - Perhaps the largest renewable resource that can be converted into a variety of fuels for electricity generation and transport. Some of the potential projects could be:

- Cogeneration using biomass wastes e.g. sugar cane bagasse, rice husks, coconut shells and corn cobs that create an opportunity to produce on-site power and steam (also cooling if tri-generation is used) for agro-industry facilities. It can also generate electricity surplus for export to the grid or provide off-grid lighting and other electrical demand services to the local community
- Bio fuels (ethanol, diesel) for the transport sector. At an intermediate stage of processing, crude bio-diesel can be provided to power generation facilities. Fuels can be obtained, *inter alia* from food crops (sugar, coconuts, corn, soy) and non-food crops (oil bearing fruits such as jatropha)
- Briquetting of agricultural residues in countries where there is a large population pressure on wood resources, e.g. from wheat and straw wastes
- Anaerobic digestion to produce biogas from which heat and electricity can be produced for on-site use (in the meat and meat-related sectors, utilizing the processing wastes, e.g. from slaughterhouses and milk processing, from agricultural manure and from the alcoholic beverage industry)

Landfill gas to energy - In the many municipal locations where wastes are dumped.



Agriculture and land-use - Animal waste management and displacement of N fertilizer (avoidance of soil N₂O emissions)

Wind and wave energy - Suitable for most countries, but especially relevant in the island-states (that are mostly also SIDS) and coastal areas

Solar energy (thermal and photovoltaic) - Is mostly untapped, for decentralized power generation especially generating electricity and heat/drying for industry (e.g. fish processing), public buildings (central/local administration, hospitals and schools) and tourism (hotels)

Fuel switching - This presents an opportunity, especially for the power sector, industry and transport, either utilizing natural gas (in those countries with these resources or available from neighbouring states) or the plentiful biomass wastes

Energy efficiency - In business, industry, households and the public sector in most countries. This encompasses a range of measures from improved maintenance, efficiency standards and repair to retrofitting/installing new equipment (electric motors, steam pumps, boilers, lighting, electrical appliances etc.)

Utilization of flared gas - In those countries where extraction of crude oil takes place, although with little discernable sustainable development benefits. Associated gas can be processed on-site into LPG or CNG for onward transport to remote locations or piped straight into power facilities

Geothermal energy - In a few countries on fault lines/in volcanically active regions

Afforestation and reforestation - Reforestation on marginal and degraded land, agro-forestry, rangeland improvement, soil restoration, soil organic carbon, and dry land rice. So far with only one project in the pipeline but arguably a project type with a great potential in the region

Industrial energy - Processing and production of metals such as aluminium, copper, manganese and goldmines, production of other materials such as cement.

Coal mine methane - In coal rich nations.

22. **Potential in Least Developed Countries** - The potential for CDM projects in the LDCs is similar to that in Africa as 36 of them are in sub-Saharan Africa and only 14 in other regions. Therefore, much of what has been presented in the previous section can be applied in their case. In particular, the following project types have been highlighted in previous references on the CDM in the context of LDCs:

- Renewable energy: solar, wind and bio-energy/biomass wastes
- Transport sector/cleaner fuels from petroleum products (petrol and diesel) to bio fuels (ethanol and diesel)
- Recovery of degraded lands for fuel crops
- End use energy efficiency in the household, public and private sectors (lighting, fuel switching in small- and medium-scale industrial sectors), and
- Landfill gas to energy.

However, considering the economic status of these countries particular attention should be paid to the following issues when approaching the CDM:



- Alleviation of poverty is a main concern, with economic and social issues coming higher on the agenda than least-cost CERs from a purely market-based CDM. Other approaches, such as bundling, and programmatic CDM may be more welcome.
- There may be a greater need for adaptation to the impacts of climate change as these are the poorest of countries. Therefore, approaches merging CDM and adaptation will rank highly on the various international agendas as well as the potential credits to be gained through the carbon market (e.g. gold standard and carbon offsetting). Examples might be found in the management of fragile ecosystems (mountains, coastal zones and river catchments), for example.
- The projects will be of small, if not micro, scale
- Energy security, independence access and thereby decentralization may be an even more critical issue.

23. **Potential in Small Island Developing States** - Again, there are similarities in the group of 38 UN-affiliated SIDS to some of the project types presented under the sections on Africa and LDCs, as some of the SIDS are in sub-Saharan Africa (6) and 12 are LDCs. But as before, there are differences that mark this group such as their:

- Dependency on imported diesel (by sea) that leads to concerns about energy security and independence as well as balance of payments
- Small scale of utilities that would require bundling (in-country) or programmatic (regional) CDM. The latter would be more attractive under the CDM if means of inter-country co-operation can be found
- Potential for combining hybrid solutions of modern renewable energy technology (solar, wind, hydro, geothermal, biomass and wave/ocean energy)
- Vulnerability to sea rise and consequent need for adaptation measures in low-lying SIDS.

24. Despite the several types of CDM project areas listed above that could be undertaken, there are several barriers that need to be addressed that have not been elaborated upon here.

25. However, one barrier is relevant in the context of this paper, namely the cost size (or return on investment) ratio of potential CDM projects in SIDs. Most projects are comparatively small in sub-Saharan Africa as well as in LDCs and SIDS and are therefore unattractive to the mainstream carbon market and are very often only implemented with public sector and/or development assistance. If the CDM is to be more widely applied in these regions, more focus is required on smaller-scale projects (the private sector is mainly made up of micro, small, and medium scale enterprises that often operate in the informal economy) that, in and of themselves, bring small economic returns but that individually and cumulatively also bring more environmental and social benefits than many of the larger project types. However, these are less likely to happen as stand-alone projects due to the high transaction costs versus the small return from carbon credits.

26. Therefore, innovative approaches are needed to be considered, such as bundling, and PoAs as there is significant homogeneity and common technological levels for certain economic sectors in the region. Without such an approach it may be difficult for the individual enterprises to obtain the necessary resources (financial and technological) to go through the CDM project cycle, and reach the international markets.

27. As mentioned previously, some of the current problems in mobilizing the CDM in a wider spread of NAI Party countries could be addressed through programmatic CDM, as CDM PoAs may



help to reduce transaction costs and thereby allow participation of smaller project activities in the mechanism.

28. This approach, may also obviate the risks and costs for project participants in developing new methodologies. This is because many of the methodologies in the areas identified for CDM potential in these groups of countries may have already been developed, and improved, by project participants through the CDM process. Further, most of the already approved methodologies should be suitable to be used in PoAs. It may be that simply the awareness of these methodologies needs to be raised and their use simplified through workshops, handbooks and various tools to be more user-friendly. Moreover, the approval of PoAs and bundling of project activities in themselves should result in a wider application of particular methodologies, lower the associated transaction costs and provide for greater understanding of the CDM potential in these countries.

VI. Enhanced co-ordination

29. The previous sections indicate areas of concern related to the equitable geographic distribution of CDM project activities and suggest possible activities and ways to address those concerns as well as identifying potential project types/methodologies. However, it should be kept in mind that there have been some efforts to address these concerns in the target groups of NAI countries and some projects have already entered the official pipeline. But these efforts could have been better coordinated and better balanced in their sectoral and geographic coverage as well as in the CDM issues addressed.

30. For example, some countries in sub-Sahara Africa have received a comparatively large amount of CDM attention, with several cases of different agencies and donors assisting the same institution and supporting the same national experts for CDM work in these countries. It is not surprising then that some of these sub-Sahara Africa countries are among the first showing results in terms of CDM projects in the pipeline.

31. But the majority of Parties in sub-Sahara African countries have received little to no assistance and those that have benefited from a few interventions have not received adequate support to get projects into the CDM pipeline, receiving mostly general awareness raising and workshops or assistance to establish the DNA. The story is similar for the LDCs and SIDS groups of countries.

32. As can be seen from the previous sections, there are a number of areas that need to be addressed to make the CDM function in a host country and these are best delivered in a holistic, coordinated and long-term manner.

33. The approach being taken under the Nairobi Framework may be helpful in this respect as it will map the needs and list the required activities as a template for partner agencies, and potential donors, to follow when providing assistance. The Nairobi Framework is being facilitated by the UNFCCC Secretariat and activities undertaken under it will be made publicly available through its website to show where assistance is being provided and indicate where there are gaps (sectoral, geographical, process or otherwise). In this manner, the CDM community will be in a position to see where progress is being made and where additional efforts are needed.

34. Further, the CDM Bazaar, a cost-free web-based platform for the exchange of information on CDM project opportunities will provide for greater coordination in the CDM market place. It may help in reducing transaction costs in the CDM project cycle as well as encourage increased information exchange and dialogue among current and potential future project participants and other market players. The CDM Bazaar will make publicly available relevant information on proposed project activities and on investors seeking opportunities, in order to assist in arranging funding of project activities. As such, the CDM Bazaar should generally enhance the capacity of NAI stakeholders by directing users to vital CDM information sources and contacts.



35. In addition, it is expected that inter-agency cooperation under the Nairobi Framework will reduce duplication, and provide more holistic and longer term assistance with wider geographic coverage, resulting in more CDM projects in the pipeline from those countries assisted by the activities under the Nairobi Framework.



Number	Methodology	CERs	Status	Country
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Appendix II

PROJECTS AND METHODOLOGIES USED IN AFRICA, LEAST DEVELOPED COUNTRIES AND SMALL ISLAND DEVELOPING STATES

Sub-Sahara Africa⁴

Afforestation

AR-AMS0001	Small-scale afforestation and reforestation project activities	5579	Validation	Uganda
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Biomass

ACM0006	Electricity generation from biomass residues [Grid-connected]	95521	Validation	Kenya
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Energy efficiency

AM0038	Improved electrical energy efficiency of an existing submerged electric arc furnace used for the production of SiMn [Grid-connected]	55044	Requesting Registration	South Africa
AMS-I.C AMS-II.C AMS-II.E	Thermal energy for the user with or without electricity Demand-side energy efficiency programmes for specific technologies Energy efficiency and fuel switching measures for buildings	6580	Registered	South Africa

Flaring

AM0037	Flare reduction and gas utilization at oil and gas facilities	2263165	Review Requested	Equatorial Guinea
AM0009	Recovery/utilization of gas from oil wells that would otherwise be flared	2531500	Validation	Nigeria
AM0009	Recovery/utilization of gas from oil wells that would otherwise be flared	1496934	Registered	Nigeria

Fuel-switching

AM0008	Industrial fuel switching from coal or petroleum fuels to natural gas	19159	Registered	South Africa
AM0008	Industrial fuel switching from coal or petroleum fuels to natural gas	100941	Registered	South Africa
AM0036	Fossil fuel switch to biomass residues in boilers for heat generation	184633	Requesting Registration	South Africa
AMS-I.C	Thermal energy for the user with or without electricity [Fuel switch]	55912	Registered	South Africa

⁴ Uganda is also a LDC and a Landlocked Developing Country (LLDC). Equatorial Guinea, Senegal and the United Republic of Tanzania are also LDCs.



Number	Methodology	CERs	Status	Country
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Landfill gas

ACM0001	Landfill gas project activities [Grid-connected]	943546	Validation	Côte d'Ivoire
ACM0001	Landfill gas project activities	131322	Validation	Senegal
ACM0001	Landfill gas project activities	202271	Requesting Registration	UR of Tanzania
AM0010	Landfill gas capture and electricity generation where not mandated by law	350170	Validation	South Africa
AM0010	Landfill gas capture and electricity generation where not mandated by law	68833	Registered	South Africa
AM0011	Landfill gas with electricity generation w/o methane destruction in baseline	188390	Registered	South Africa

N₂O

AM0034	Catalytic reduction of N ₂ O inside the ammonia burner of nitric acid plants	57097	Validation	South Africa
AM0034	Catalytic reduction of N ₂ O inside the ammonia burner of nitric acid plants	264143	Validation	South Africa
AM0034	Catalytic reduction of N ₂ O inside the ammonia burner of nitric acid plants	960322	Requesting Registration	South Africa
AM0028	Catalytic N ₂ O destruction in tail gas of Nitric Acid or Caprolactam plants	473338	Registered	South Africa

Renewable energy

AMS-I.D	Grid connected renewable electricity generation [Hydro]	25737	Validation	South Africa
AMS-I.D	Grid connected renewable electricity generation [Biogas]	29933	Registered	South Africa
AMS-I.D	Grid connected renewable electricity generation [Hydro]	36210	Registered	Uganda
AMS-II.B	Supply side energy efficiency improvements – generation			

Waste gas

ACM0004	Waste gas and/or heat for power generation	608242	Validation	South Africa
ACM0008	Coal bed methane and coal mine methane capture and use for power (electrical or motive) and heat and/or destruction by flaring [Goldmine]	376060	Validation	South Africa
AMS-III.D	Methane recovery in agricultural and agro industrial activities	12758	Validation	South Africa

Northern Africa⁵*Co-generation*

AM0014	Natural gas-based package cogeneration	25629	Validation	Egypt
AM0032	Waste gas or waste heat based cogeneration system	102291	Validation	Egypt

⁵ Northern Africa has been presented for comparative purposes.



Number	Methodology	CERs	Status	Country
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Fuel switching

ACM0009	Industrial fuel switching from coal or petroleum fuels to natural gas	455270	Requesting Registration	Egypt
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N₂O

AM0028	Catalytic N ₂ O destruction in tail gas of Nitric Acid or Caprolactam plants	1065881	Registered	Egypt
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Renewable energy

ACM0002	Grid-connected electricity generation from renewable sources [Hydro]	183138	Validation	Egypt
ACM0002	Grid-connected electricity generation from renewable sources [Wind]	247705	Review Requested	Egypt
ACM0002	Grid-connected electricity generation from renewable sources [Wind]	156026	Registered	Morocco
AMS-I.D	Grid connected renewable electricity generation [Wind]	28651	Registered	Morocco
AMS-I.A	Electricity generation by the user [Solar]	38636	Registered	Morocco

Landfill gas

ACM0001	Landfill gas project activities	370903	Registered	Egypt
ACM0001	Landfill gas project activities	369664	Registered	Tunisia
ACM0001	Landfill gas project activities	317909	Registered	Tunisia
AMS-III.G	Landfill methane recovery	32481	Validation	Morocco

Waste gas

ACM0004	Waste gas and/or heat for power generation	89053	Validation	Morocco
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Least Developed Countries*Biogas*

AMS-I.C	Thermal energy for the user with or without electricity	46893	Registered	Nepal
AMS-I.C	Thermal energy for the user with or without electricity	46990	Registered	Nepal

Energy efficiency

AMS-I.C	Thermal energy for the user with or without electricity	3338	Registered	Laos
AMS-II.D	Energy efficiency and fuel switching measures for industrial facilities			

Landfill gas

ACM0001	Landfill gas project activities	80000	Registered	Bangladesh
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Number	Methodology	CERs	Status	Country
ACM0002	Grid-connected electricity generation from renewable sources			
AM0025	Avoided emissions from organic waste through alternative waste treatment processes	89259	Registered	Bangladesh

Renewable energy

AMS.I-A	Electricity generation by the user [Solar]	10980	Validation	Bangladesh
AMS.I-A	Electricity generation by the user [Hydro]	524	Registered	Bhutan
AMS.I-A	Electricity generation by the user [Hydro]	33280	Validation	Nepal

Small Island Developing States*Biomass*

ACM0006	Electricity generation from biomass residues	46175	Validation	Guyana
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Energy efficiency

ACM0007	Conversion from single cycle to combined cycle power generation	342235	Review requested	Cuba
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Renewable energy

AMS-I.D	Grid connected renewable electricity generation [Hydro]	24928	Registered	Fiji
AMS-I.D	Grid connected renewable electricity generation [Wind]	20235	Validation	Dominican Republic
ACM0002	Grid-connected electricity generation from renewable sources [Wind]	321433	Validation	Dominican Republic
ACM0002	Grid-connected electricity generation from renewable sources [Wind]	123916	Registered	Dominican Republic
ACM0002	Grid-connected electricity generation from renewable sources [Wind]	52540	Registered	Jamaica
ACM0002	Grid-connected electricity generation from renewable sources [Geothermal]	278904	Registered	Papua New Guinea
