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## Trade and Development Board

### Trade and Development Commission

Expert meeting on trade and climate change: trade and  
investment opportunities and challenges under the  
Clean Development Mechanism (CDM)

Geneva, 1–3 April 2009

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## Trade and investment opportunities and challenges under the Clean Development Mechanism (CDM)

Note by the UNCTAD secretariat

### *Executive summary*

Global concerns over the impact of climate change, in particular the adverse effects on developing countries, as well as the related significant economic costs associated with inaction, have put climate change very high on the international agenda. We now face the dual challenge of addressing climate change and its impacts, without hindering the development aspirations of developing countries. The Kyoto Protocol, an international agreement linked to the United Nations Framework Convention on Climate Change (UNFCCC), sets binding commitments for industrialized countries to reduce their greenhouse gas emissions by an average of five per cent against 1990 levels over the five-year period 2008–2012. It provides important investment opportunities for developing countries through the Clean Development Mechanism (CDM). Investment under the CDM, which may not necessarily follow traditional foreign direct investment flows, provides an opportunity for developing countries in diversifying their economies whilst pursuing less carbon-intensive development options. Developing countries need to seize the trade and investment opportunities for sustainable development offered by the CDM and ensure that these are captured domestically in a manner that lessens their economies' vulnerabilities, increases their energy security and augments their chances to integrate themselves in the globalized world economy in more equitable terms. In a broader sense, economic diversification becomes a way to reduce both economic and climate vulnerability, and increases the resilience of a country to adverse economic and climate impacts.

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## I. Introduction

1. Global concerns over the impact of climate change, in particular the adverse effects on developing countries, as well as the related significant economic costs associated with inaction, have put climate change very high on the international agenda. We now face the dual challenge of addressing climate change and its impacts, without hindering the development aspirations of developing countries.

2. Consensus is arising among Governments, companies and the public that inaction is no longer an option. The Bali Action Plan<sup>1</sup> – adopted in December 2007 at the thirteenth session of the Conference of the Parties (COP 13) of the UNFCCC as the way forward for current climate change negotiations – emphasizes sustainable development as the cornerstone of climate change efforts. More importantly, it calls upon countries to enhance action in the provision of financial resources and investment to support action on mitigation, adaptation and technology cooperation, including the consideration of, inter alia:<sup>2</sup>

- (a) Positive incentives for developing country parties for the enhanced implementation of national mitigation strategies and adaptation action;
- (b) Financial resources for the implementation of adaptation action on the basis of sustainable development policies; and
- (c) Mobilization of public- and private-sector funding and investment, including facilitation of carbon-friendly investment choices.

3. The Bali roadmap gives the policy framework for international cooperation towards a meaningful policy response based on four pillars – mitigation, adaptation, finance and technology – and is expected to achieve results by the fifteenth session of the Conference of the Parties (COP 15) of the UNFCCC in Copenhagen, Denmark in December 2009. An agreement by COP 15 on the second commitment period under the Kyoto Protocol would avoid a discontinuation of ongoing efforts to combat climate change after 2012.

4. The fourteenth session of the Conference of the Parties (COP 14), held in Poznan, Poland in December 2008, which served as a halfway mark towards the December 2009 deadline, was expected to focus on long-term cooperation and the post-2012 period, when the Kyoto Protocol's first commitment period expires. The Poznan negotiations resulted in some progress, but they did not achieve significant breakthroughs. However, Poznan was a successful step, as it ended with a clear commitment from Governments to shift into full negotiating mode in 2009 in order to shape an ambitious and effective international response to climate change.

5. There is an emerging consensus that the future, globalized world economy will be carbon-constrained – that is, that the climate externality associated with economic activity in most sectors will no longer remain untamed. This scenario might affect the ground rules of geopolitical and economic relations. Coping with this will involve not just innovative business practices, but also a fundamental shift in strategic thinking. Future trade, investment and economic development decisions will be increasingly influenced by the “new world energy order”. Carbon-intensive sectors will likely give way to less carbon-intensive production and process methods. Environmental standards will be stricter. Entire economies – firms and consumers – will be influenced by the new trends in energy generation, distribution and use. This will pose new challenges to current economic thinking and development cooperation whilst, at the same time, opening opportunities for new

<sup>1</sup> Bali Action Plan, Decision-/CP.13, available at [www.unfccc.int](http://www.unfccc.int).

<sup>2</sup> *Ibid.*, para. 1(e).

technologies and modes of production which are more sustainable and less fossil fuel-dependent. Competitiveness and carbon leakage concerns, as well as issues such as carbon labelling and economic diversification, will certainly come to the fore of economic analysis and policy advice.

6. The corollary of energy insecurity in the developed world is the rising energy security of the developing world. Failure to promote greenhouse gas mitigation in tandem with the growing energy demand in the South could have frightening consequences, not just for energy security and prices, but also for the climate system, with adverse effects foreseen in the agriculture, fishing, freshwater supply, irrigation, tourism and coastal-zone housing sectors. It is thus imperative that developing countries be assisted to actively pursue their economic growth in an environmentally-sustainable manner – by decoupling that growth from untamed greenhouse gas emissions.

7. Developing countries have many demands on their resources, and making the necessary expenditures on sophisticated, clean, but also costly technologies could divert much-needed funds away from their development requirements. They need (a) reasonably priced access to technologies; (b) trade policies that support climate change mitigation and adaptation; (c) more innovations in energy efficiency of products and services; (d) power generation; (e) buildings and transport; (f) a significant increase in the use of renewable energy, including biofuels; and (g) lower emissions from land use and deforestation. Finally, their developed country partners need to strictly avoid using their climate response policies as discrimination in disguise against developing country exports.

## **II. The climate change regime**

8. The 1992 UNFCCC provides the framework for a collaborative and multilateral effort to combat climate change based on the principle of common but differentiated responsibilities among its parties. In that sense, it prompts the international community to take appropriate action and respects the fact that developing countries have development imperatives and a lower level of responsibility for the considerable increase in greenhouse gas concentrations in the atmosphere, which is directly related to energy, industrial and transport needs for human, social and economic development.

9. The Kyoto Protocol, an international agreement linked to the convention, was adopted on 11 December 1997 and entered into force on 16 February 2005. The protocol sets binding agreements for industrialized countries to reduce their greenhouse gas emissions by an average of 5 per cent against 1990 levels over the five-year period 2008-2012. Individual country quantified emissions limitations or reduction commitment targets are listed in Annex B of the Kyoto Protocol.<sup>3</sup>

10. Its ratification represented a watershed on two levels: (a) it provided evidence that Governments understood the severity of the climate problem and realized the necessity to begin restructuring their economies to mitigate adverse climate effects; and (b) it marked the beginning of a fundamental shift in the world economy, particularly in its energy and transportation policies. It is now clear that our future will be carbon-constrained and that the fossil fuel-based economy is bound to be replaced in time with climate-protective alternatives. This emerging economic shift brings with it opportunities for development, trade, technology transfer and investment.

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<sup>3</sup> Please see [http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php).

11. The Kyoto Protocol provides important investment opportunities for developing countries through the CDM. Investment under the CDM, which may not necessarily follow traditional foreign direct investment flows, provides an opportunity for developing countries in diversifying their economies. Such investment flows may carry opportunities for technology transfer and the fostering of indigenous technological innovation.

12. From a trade perspective, it is worth mentioning that the Kyoto Protocol does not contain specific trade obligations. However, the implementation of the protocol's targets, as well as the application of its market-based mechanisms, will necessarily make use of policy tools that certainly have trade implications. For instance, to meet its Kyoto reduction targets, a developed country Government may introduce, for example, carbon/energy taxes, subsidies, energy efficiency standards, eco-labeling requirements, specification criteria for tenders for government procurement, border tax adjustments to offset competitiveness losses from carbon taxes and tariff preferences for developing countries.<sup>4</sup>

13. These economic measures, although national in scope, have trade implications, as they raise the bar regarding fossil fuel imports and products with relatively higher emission levels. Therefore, it becomes crucial for countries to assess potential competitiveness implications of their climate policy and to ensure consistency with World Trade Organization rules, so as to avoid potential conflicts in fulfilling their Kyoto obligations.

14. More recently, the introduction of carbon labeling by private companies – the so-called “food miles” controversy – has raised concerns about unfair discrimination against exports that travel long distances to large developed country markets. With a closer look, however, it is clear that transport costs alone often represent an insignificant portion of the carbon embodied in traded goods, and that often such (imported) goods remain *less* carbon-intensive on a full life cycle basis when compared to domestically produced goods in industrialized countries.

15. Developing countries need to seize the trade and investment opportunities for sustainable development offered by the CDM and ensure that these are captured domestically in a manner that lessens their economies' vulnerabilities, increases their energy security and augments their chances to integrate themselves in the globalized world economy in more equitable terms. In a broader sense, economic diversification becomes a way to reduce both economic and climate vulnerability, and increases the resilience of a country to adverse economic and climate impacts.

16. The construction of a new post-2012 regime, due to be concluded under the Bali Road Map – based on the United Nations principles of international collaboration, fairness and equity – will signify a daunting exercise, where developed and developing country alike, as well as United Nations agencies such as UNCTAD, have a role to play.

17. At COP 14, Decision -/CMP.4 – Further guidance relating to the clean development mechanism – paragraph 55 encourages parties and United Nations organizations, in particular partner agencies of the Nairobi Framework, to focus their capacity-building activities on CDM project activities, in close consultation

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<sup>4</sup> By way of example, if the Government imposes a national carbon tax, it may adjust taxes at the border to mitigate the competitive effects of cheaper imports that are not subject to a similar level of carbon tax in the country of origin. The country may use subsidies to promote energy conservation, the use of renewable energy and increased adoption of less carbon-intensive technologies. It may set high energy efficiency standards for products such as automobiles sold in the country, either domestically produced or imported. It may use eco-labels to use consumer preference to help meet its Kyoto target. The Government may also support innovation in – and purchase of – products producing lower emissions through government procurement choices.

with the recipient countries and in coordinated fashion across bilateral and multilateral activities, especially in least developed countries, small island developing States and Africa.

### III. Addressing trade and investment opportunities and challenges under the Clean Development Mechanism

#### A. Need for investment

18. The International Energy Agency forecasts that, by 2030, world energy demand will grow by 60 per cent and global greenhouse gas emissions will rise by 55 per cent under the agency's reference scenario. A considerable increase in emissions is likely to come from developing countries, particularly those highly dependent on coal such as China and India. At the same time, under the same scenario, over 1 billion people will still lack adequate access to energy. The challenges of climate policy, then, are how to introduce policy incentives to steer investments towards lower carbon-intensive energy production and use, and how to make trade and climate policy mutually supportive, thereby avoiding locking economies into unsustainable paths for the next 30–50 years.

19. While they are a major part of the challenge, energy investments are only one facet. More broadly, in addressing climate change, the UNFCCC reports that, globally, \$200billion–210 billion of additional investment and financial flows will be necessary by 2030 to reduce global greenhouse gas emissions by 25 per cent below 2000 levels, half of which would be needed in developing countries. Table 1 summarizes the estimated emission reductions and investment and financial flows expected by 2030.

**Table 1. Greenhouse gas emission reductions and additional investment and financial flows in 2030 under the mitigation scenario**

Sectors	Global		Non-annex I parties only			
	Emission reductions (gigatons CO <sub>2</sub> equivalent)	Annual investment and financial flows (2005 \$billion)	Emission reductions (gigatons CO <sub>2</sub> equivalent)	Annual investment and financial flows (2005 \$billion)	Share of global emission reduction (%)	Share of global investment and financial flows (%)
Fossil fuel supply <sup>a</sup>		-59		-32.5		54
Power generation: fossil fuel-fired generation, transmission and distribution <sup>b</sup>		-155		-79		
Power generation: nuclear, renewables, hydropower and carbon dioxide capture and storage <sup>b</sup>	9.4	148.5	5.0	73.4	53	49
Industry <sup>c</sup>	3.8	35.6	2.3	19.1	60	54
Transport	2.1	87.9	0.9	35.5	42	40
Buildings <sup>c</sup>	0.6	50.8	0.3	14.0	48	28

Sectors	Global		Non-annex I parties only			
	Emission reductions (gigatons CO <sub>2</sub> equivalent)	Annual investment and financial flows (2005 \$billion)	Emission reductions (gigatons CO <sub>2</sub> equivalent)	Annual investment and financial flows (2005 \$billion)	Share of global emission reduction (%)	Share of global investment and financial flows (%)
Waste	0.7	0.9	0.5	0.6	64	64
Agriculture	2.7	35.0	0.4	13.0	14	37
Forestry	12.5 <sup>d</sup>	20.7 <sup>d</sup>	12.4	20.6	100	99
Technology research and development		35 to 45 <sup>e</sup>				
<b>Total</b>	<b>31.7</b>	<b>200.5 to 210.5</b>	<b>21.7</b>	<b>64.7</b>	<b>68</b>	
Reference scenario (total for all sectors)	61.52 <sup>f</sup>	3 179	35.6 <sup>g</sup>	1 656		

Source: UNFCCC secretariat 2007. Investment and Financial Flows to Address Climate Change.

<sup>a</sup> Global investment for fossil fuel supply in 2030 drops from \$322 billion under the reference scenario to \$263 billion under the mitigation scenario.

<sup>b</sup> Total investment for power supply in 2030 declines from \$439 billion under the reference scenario to \$432 billion under the mitigation scenario. Investment for coal-, oil- and gas-fired generation, and transmission and distribution, would be reduced by \$155 billion. The \$148.5 billion reported in this table is the additional investment that would be needed for renewables, carbon dioxide capture and storage, nuclear power and hydropower.

<sup>c</sup> The emission reductions reported for the industry and building sectors reflect only the direct emission reductions for those sectors. The investment in electricity efficiency measures is included in the investment flows for the industry and building sectors, but the emission reductions due to those measures are reflected in lower emissions for the power sector.

<sup>d</sup> In the forestry sector, the additional global investment and financial flows needed under the mitigation scenario total about \$21 billion, of which financial flows for emission reductions through reduced deforestation account for \$12 billion (5.7 gigatons CO<sub>2</sub> reduced) and flows for forest management account for \$8 billion (6.5 gigatons CO<sub>2</sub> avoided). Afforestation and reforestation account for the rest. Almost all forestry sector-related investment and financial flows occur in developing countries. These results warrant caution due to huge uncertainty in assumptions.

<sup>e</sup> Only global estimates are available in the 2007 report.

<sup>f</sup> The figures are total emissions (gigatons CO<sub>2</sub> equivalent) in 2030.

<sup>g</sup> Includes emissions from global land use, land-use change and forestry of 5.8 gigatons CO<sub>2</sub>, for which a regional desegregation is not available, so the total could be as low as 29.8 gigatons CO<sub>2</sub> equivalent.

20. Private and public finance as well as national policies play a significant role in mitigating climate change. As the private sector is the main source of global investment and financial flows, it will require appropriate policies and market incentives to shift investment decisions towards mitigation actions and technologies. An enabling policy environment and targeted incentives may also play a crucial role in guiding investments to achieve meaningful emission reductions. To attract the required additional investment, Governments need to institute policies, laws and regulations that offer the prospect of a growing market for mitigation technologies.

21. In providing additional investment and financial flows to address climate change, three broad strategies have been identified:<sup>5</sup>

- (a) Shifting of investments and financial flows made by private and public investors to more sustainable, climate-friendly and climate-resilient alternatives, for example by redirecting investments from traditional energy supply sources and technologies to low greenhouse gas-emitting ones;
- (b) Scaling up international private and public capital dedicated to investments and financial flows in mitigation or adaptation activities or technologies, for example by expanding the carbon market, by increasing contributions from parties included in annex II to the convention (annex II parties) or by identifying new sources of funding and by enhancing the role of CDM under the post-2012 commitment period; and
- (c) Optimizing the allocation of the funds available by spreading the risk across private and public investors, e.g. by providing incentives for private investment in the early deployment of new technologies or by improving the capacity of the insurance market.

## **B. CDM as a tool for both developed and developing countries**

22. The CDM is one of the three market-based mechanisms under the Kyoto Protocol that participating countries can use to meet their greenhouse gas reduction targets. It is the only mechanism that involves developing countries.

23. Article 12 of the Kyoto Protocol allows a developed country to implement an emission reduction project in developing countries. Such projects must provide emission reductions that are additional to what would otherwise have occurred and must contribute to sustainable development in the host country. CDM projects earn saleable (and tradable) certified emission reduction (CER) credits, which can be used in meeting Kyoto targets.

24. The CDM benefits both the investor and host countries by contributing to sustainable development in the host developing countries and by allowing investor countries to meet their greenhouse gas reduction targets at the lowest possible cost by taking advantage of the lower marginal cost of reducing greenhouse gas emissions in developing countries.

25. For developing countries, the CDM can contribute to the achievement of their sustainable development goals through:

- (a) Transfer of technology and financial resources for climate-friendly activities;
- (b) Sustainable ways of energy production, generation and use;
- (c) Increased energy efficiency and conservation; and
- (d) Poverty alleviation through income and employment generation associated with mitigation and adaptation programmes.

26. Since 2005, the CDM has created a dynamic carbon market and has rapidly progressed. Administered by the CDM Executive Board, the CDM pipeline has more than 4,000 projects, and the number of projects requesting registration is increasing. By January 2009, 1,300 projects were approved and were being implemented, involving over \$10 billion in new investment. However, the experience over the years in developing emission reduction activities under the

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<sup>5</sup> UNFCCC (2008). Investment and financial flows to address climate change: an update. FCCC/TP/2008/7.



CDM has shown that improvements could be introduced in terms efficiency, scope, lead time for approval, sector coverage and geographic distribution.

### C. State of play of the CDM

27. As of January 2009, the CDM pipeline contained 4,475 projects (excluding the 87 rejected by the Executive Board and the 24 withdrawn). The 1,300 CDM registered projects have earned roughly \$4.8 billion since 2005, when the Kyoto Protocol entered into force.

**Table 2. Status of CDM projects**

<b>Status of CDM projects</b>	<b>Number</b>
<b>At validation</b>	<b>2,694</b>
Request for registration	141
Request for review	89
Correction requested	97
Under review	17
<b>Total in the process of registration</b>	<b>344</b>
Withdrawn	24
Rejected by Executive Board	87
Registered, no issuance of CERs	859
Registered, CER issued	441
<b>Total registered</b>	<b>1,300</b>
Total number of projects (including rejected and withdrawn)	4,475

*Source:* United Nations Environment Programme (UNEP) (2009).  
Risoe CDM Pipeline Analysis and Database, January.

28. The regional distribution of CDM projects in the pipeline (table 3) shows that the Asia and Pacific region has the largest number of projects, with 3,339, followed by Latin America with 837. These two regions host roughly 96 per cent of the projects.

**Table 3. Regional distribution of CDM projects**

<b>Total in the CDM pipeline</b>	<b>Number</b>	<b>kCERs</b>	<b>2012 kCERs</b>	<b>Population</b>	<b>2012 CER per capita</b>		
Latin America	837	<b>19.2%</b>	80,159	427,801	<b>14.9%</b>	449	0.95
Asia & Pacific	3,339	<b>76.5%</b>	484,977	2,299,604	<b>79.9%</b>	3,418	0.67
Europe and Central Asia	43	<b>1.0%</b>	4,077	18,992	<b>0.7%</b>	149	0.13
Africa	90	<b>2.1%</b>	18,894	92,511	<b>3.2%</b>	891	0.10
Middle East	55	<b>1.3%</b>	8,366	38,003	<b>1.3%</b>	186	0.20
Less developed countries	4,364	<b>100%</b>	596,473	2,876,911	<b>100%</b>	5,093	0.56

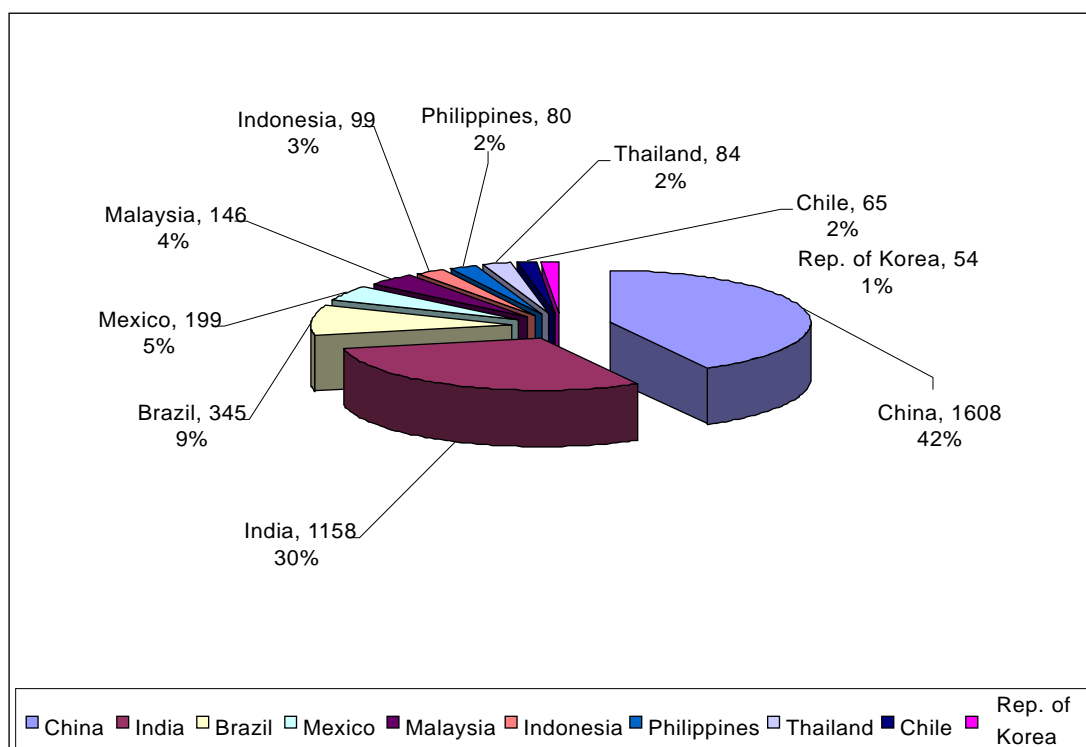
*Source:* UNEP (2009). Risoe CDM Pipeline Analysis and Database, January.

29. The top 10 developing countries hosting CDM projects are, in decreasing order: China, India, Brazil, Mexico, Malaysia, Indonesia, the Philippines, Thailand, Chile and the Republic of Korea. Figure 1 shows the number of CDM projects these 10 developing countries are hosting, which account for 87 per cent of all CDM projects in the pipeline.

30. The mitigation expected to be achieved by the projects currently in the CDM pipeline is just over 2.9 Gigatons of CO<sub>2</sub> equivalent. By comparison, the projected gap in annex I Kyoto Protocol commitments to 2012 relative to their current emission trajectories is roughly 5.0 Gigatons of CO<sub>2</sub> equivalent. If the entire pipeline produces mitigation as projected (which it will not, as new projects will

enter the pipeline), then those emission reductions could be used to fill almost 60 per cent of the projected annex I compliance gap.

**Figure 1. Top 10 developing countries where CDM projects are hosted**



Source: UNEP (2009). Risoe CDM Pipeline Analysis and Database, January.

31. Table 4 shows the overall CDM pipeline grouped according to project type. The accumulated 2012 CERs are the total GHG reduction in the projects from the start or the crediting period until the end of 2012. The energy efficiency (EE) industry has been split into EE-own generation, where electricity is produced from waste gas or wasted energy, and EE industry, which now only covers end-use savings. Renewables include hydro, biomass energy, wind, biogas, solar, geothermal and tidal.

**Table 4. CDM projects grouped in types**

Type	CDM							
	Number		CERs/year (1,000s)		2012 CERs (1,000s)		CERs issued (1,000s)	
Hydro	1,150	26%	118,015	20%	473,580	16%	8,333	3%
Biomass energy	660	15%	39,996	7%	203,783	7%	11,128	5%
Wind	621	14%	53,412	9%	242,429	8%	8,801	4%
EE-own generation	395	9%	60,337	10%	277,945	10%	10,313	4%
Landfill gas	321	7%	49,407	8%	262,476	9%	5,600	2%
Biogas	275	6%	13,242	2%	61,437	2%	1,111	0%
Agriculture	230	5%	8,597	1%	51,823	2%	3,670	2%
EE industry	178	4%	6,638	1%	33,285	1%	865	0%
Fossil fuel switch	139	3%	44,226	7%	205,175	7%	1,767	1%
N <sub>2</sub> O	66	2%	48,559	8%	258,793	9%	52,279	22%
Coal bed/mine methane	63	1%	28,199	5%	131,315	5%	638	0%

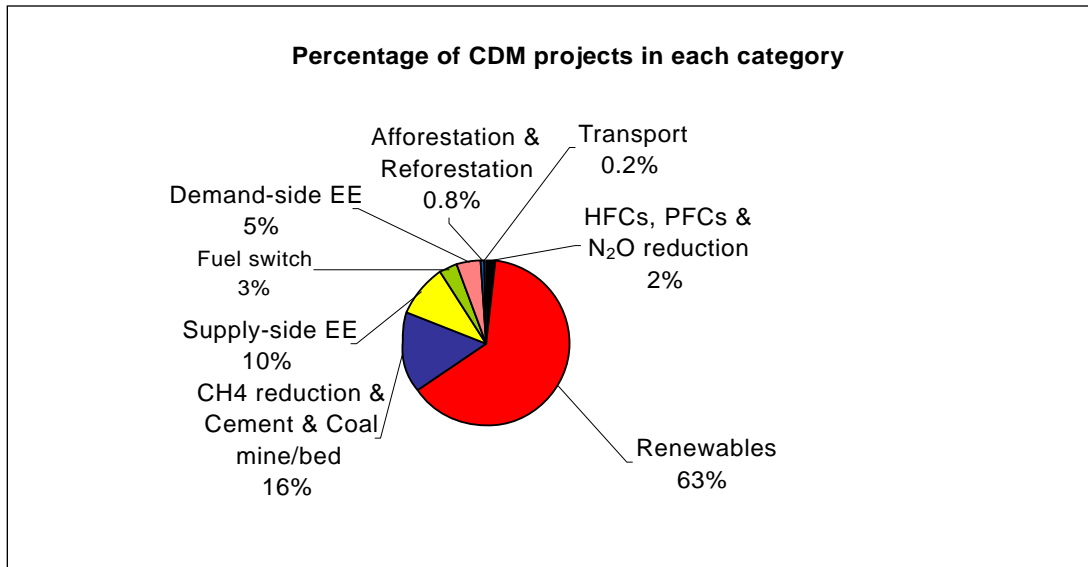
Type	CDM							
	Number		CERs/year (1,000s)		2012 CERs (1,000s)		CERs issued (1,000s)	
EE supply side	49	1%	14,591	2%	32,549	1%	328	0%
Cement	38	1%	6,775	1%	40,045	1%	1,103	0%
Afforestation & Reforestation	36	1%	1,888	0%	10,876	0%	0	0%
Fugitive	29	1%	10,785	2%	56,903	2%	5,153	2%
Solar	27	1%	704	0%	3,059	0%	0	0%
Hydrofluorocarbons (HFCs)	23	1%	83,066	14%	493,877	17%	128,819	54%
EE households	14	0%	945	0%	3,936	0%	0	0%
Geothermal	13	0%	2,457	0%	13,751	0%	318	0%
EE service	11	0%	170	0%	730	0%	0	0%
Transport	9	0%	981	0%	4,885	0%	129	0%
Perfluorocarbons (PFCs)	8	0%	1,121	0%	4,736	0%	0	0%
Energy distribution	7	0%	2,040	0%	8,390	0%	0	0%
Tidal	1	0%	315	0%	1,104	0%	0	0%
CO <sub>2</sub> capture	1	0%	7	0%	29	0%	0	0%
<b>Total</b>	<b>4,364</b>	<b>100%</b>	<b>596,473</b>	<b>100%</b>	<b>2,876,911</b>	<b>100%</b>	<b>240,353</b>	<b>100%</b>
HFCs, PFCs and N <sub>2</sub> O reduction	97	2%	132,747	22%	757,405	26%	181,098	75%
Renewables	2,747	63%	228,142	38%	999,142	35%	29,690	12%
CH <sub>4</sub> reduction & cement & coal mine/bed	682	16%	103,769	17%	542,592	19%	16,164	6.7%
Supply-side EE	451	10%	76,968	13%	318,884	11%	10,640	4.4%
Fuel switch	139	3.2%	44,226	7.41%	205,175	7.1%	1,767	0.7%
Demand-side EE	203	4.7%	7,753	1.30%	37,952	1.3%	865	0.4%
Afforestation & reforestation	36	0.8%	1,888	0.3%	10,876	0.4%	0	0.0%
Transport	9	0.2%	981	0.2%	4,885	0.2%	129	0.1%

Source: UNEP (2009). Risoe CDM Pipeline Analysis and Database, January.

32. By January 2009, total CERs registered and issued amount to 240 million tons of CO<sub>2</sub> equivalent applying an average carbon price of \$20 per ton shows that CDM has, since 2005, generated \$4.8 billion in CDM investment. Total CERs expected by 2012 are in the order of 2.8 billion tons, which amounts to roughly \$50 billion assuming the same average carbon price of \$20 per ton.

33. Figure 2 graphically shows the number of CDM projects in the overall pipeline. The fraction of renewable energy projects (hydro, biomass energy, wind, biogas, solar, geothermal and tidal) represents two thirds of all CDM projects in number, but only 34 per cent of CERs. Conversely, it is worth noting that HFC, PFC and N<sub>2</sub>O projects – while only accounting for 2.2 per cent of the projects – represent 26 per cent of the CERs expected by 2012. These latter types of CDM projects, however, have reportedly little or no development gains.

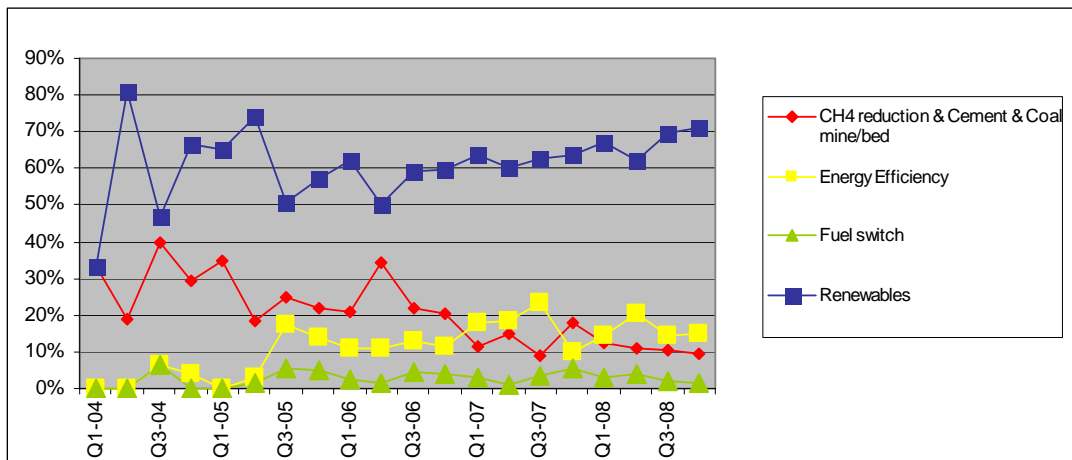
Figure 2. Number of CDM projects in the overall pipeline per each category



Source: UNEP (2009). Risoe CDM Pipeline Analysis and Database, January.

34. Figure 3 shows that the percentage of energy efficiency projects has increased and the fraction of CH<sub>4</sub> projects has decreased.

Figure 3. Percentage share of the total number of projects of 4 largest CDM categories in numbers



Source: UNEP (2009). Risoe CDM Pipeline Analysis and Database, January.

#### D. Challenges for developing countries

35. It has been widely recognized that the CDM represents an effective and flexible mechanism to engage developing countries in the global effort to combat climate change, whilst offering these countries an innovative means to attract new climate-friendly investment and technology with potentially considerable development gains. In overall money terms, its success can hardly be contested. If one applies an average carbon price of \$20 a ton of CO<sub>2</sub> to the expected 2.8 billion tons of CO<sub>2</sub> equivalent reduced by 2012, the CDM is predicted to generate payments by 2012 in the order of \$50 billion since its inception in 2005 through 2012 (this assumes that the whole existing pipeline is registered by the CDM

Executive Board). However, its benefits have not been shared equally neither among countries nor among economic sectors for various reasons (refer to figures 1 and 2 above). Similarly, from the perspective of CDM host countries, the absence of agreed quantifiable indicators in assessing sustainable development benefits to host country remains a challenge. Clearer indicators of real CDM development impact could undoubtedly help boost CDM investment in specific sectors, and ensure these are closely correlated to host country development priorities and specific national circumstances.

36. Several reasons compete to explain why only a limited number of countries and sectors have benefited so far from CDM. These can be divided into host country-specific factors and systemic factors. The host country-specific factors include:

- (a) Overwhelmed designated national authorities in charge of the CDM national approval process in each host country;
- (b) Long lead time in obtaining governmental letters or approval;
- (c) Governmental interference with CER prices, e.g. through decisions about who can buy the CERs;
- (d) Lack of due investment legislation and risk analysis associated with the incipient carbon markets in developing countries;
- (e) Lack of up-front financing for project design document formulation and validation costs;
- (f) Lack of equity investment mechanisms and leveraging; and
- (g) Lack of clarity in stakeholder consultation requirements.

37. The systemic factors include:

- (a) Complicated accreditation process for new DOEs, in charge of independent validation stage;
- (b) Difficulty with the additionality test;<sup>6</sup>
- (c) Lack of approved baseline methodologies in some sectors;<sup>7</sup>
- (d) Long lead time in obtaining validation of CDM projects (DOEs are overwhelmed and limited in number);
- (e) Lack of clear and transparent investment rules for foreign CDM investors; and
- (f) Unpredictability in ruling by CDM Executive Board.

#### **IV. Conclusion and expected outcome**

38. The CDM as one of the flexible mechanisms under the Kyoto Protocol is a win-win-win opportunity for developed countries to meet their emissions reductions targets, for developing countries to achieve sustainable development gains and for the global community to reduce global greenhouse gas emissions in a cost-effective way.

<sup>6</sup> Such tests must show that any given CDM project generates emission reductions that are additional to what would otherwise have occurred in a business-as-usual scenario, and must contribute to sustainable development in the host country.

<sup>7</sup> In order to calculate the actual reduction potential of a CDM project, methodologies are developed to estimate baseline emission levels with and without the project activity. Such methodologies are publicly available for CDM project developers once approved by the Methodology Panel.

39. The CDM has been successful in creating a dynamic carbon market, but there is admittedly significant room for improvement. The Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol reported on possible areas for improvements to project-based mechanisms under the Kyoto Protocol for the period after 2012. Such improvements could potentially have significant implications for the ability of annex I parties in achieving mitigation objectives (FCCC/KP/AWG/2008/INF.3). Specifically, under the CDM, the following topics were identified for further discussion:

- (a) Include other land use, land-use change and forestry activities;
- (b) Introduce a cap for newly eligible land use, land-use change and forestry activities;
- (c) Include carbon dioxide capture and storage;
- (d) Include nuclear activities;
- (e) Introduce sectoral CDM for emission reductions below a baseline defined at a sectoral level;
- (f) Introduce sectoral crediting of emission reductions below a previously established no-lose target;
- (g) Introduce crediting on the basis of nationally appropriate mitigation actions;
- (h) Ensure environmental integrity and assess additionality through the development of standardized, multi-project baselines;
- (i) Ensure environmental integrity and assess additionality through the development of positive or negative lists of project activity types;
- (j) Differentiate the eligibility of parties through the use of indicators;
- (k) Improve access to CDM project activities by specified host parties;
- (l) Include co-benefits as criteria for the registration of project activities; and
- (m) Introduce multiplication factors to increase or decrease the CERs issued for specific project activity types.

40. The expert meeting is expected to contribute to a better understanding of the CDM, how this mechanism functions and how its contribution to sustainable development in developing countries might be enhanced.

41. It is also expected to make concrete recommendations on how to overcome the existing obstacles to greater CDM investment flows and to give guidance to this area, in accordance with the mandate contained in paragraph 100 of the Accra Accord. The following questions can help guide the discussions:

- (a) In which sectors and in which countries is the CDM effective? In which is it less effective, and why? What can be done to address its geographical and sectoral reach?
- (b) What is the CDM's real contribution to clean technology transfer? How could it be better assessed and enhanced?
- (c) What are the implications for developing countries of the various options for reform of the CDM mechanism that have been proposed in the AWG-KP?
- (d) What are the prospects of expanding the reach of "programmatic" CDM under the post-2012 period? And to what extent could this expansion facilitate the reduction of carbon intensity in given economic sectors in developing

countries, whilst attracting investment and promoting the transfer of new and less carbon intensive technologies?

- (e) What roles could UNCTAD most usefully play in ensuring that the CDM achieves its full potential for contributing to sustainable development in host countries?
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