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MONETIZATION OF CERTIFIED EMISSION REDUCTIONS FOR THE ADAPTATION FUND

(Prepared by Invited Trustee)

MONETIZATION OF CERTIFIED EMISSION REDUCTIONS FOR THE ADAPTATION FUND

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MONETIZATION OF CERTIFIED EMISSION REDUCTIONS FOR THE ADAPTATION FUND

I. Summary

1. The Adaptation Fund (AF) will be funded by a two percent “share of proceeds” from the sale of Certified Emission Reductions (CERs) generated under the Clean Development Mechanism (CDM) of the Kyoto Protocol (KP).¹ As the interim trustee to the AF, the World Bank would monetize the CERs received by the AF under the direction of the AF Board.² The returns from the monetization would be held in the AF Trust Fund prior to their allocation by the AF Board. This paper explores how best to achieve the objectives of the monetization program, and presents initial recommendations for guidance from the AF Board.

2. *Objectives:* The monetization program is to be undertaken to (1) ensure predictable revenue flow for the AF; (2) optimize revenue for the AF while limiting financial risks; (3) be transparent and monetize the share of the proceeds in the most cost-effective manner, utilizing appropriate expertise for this task. These core objectives – **predictability; revenue optimization** while **limiting financial risks; transparency** and **cost-effectiveness** – provide the baseline for the AF’s monetization program.

3. *Status of CER market:* Carbon market volume and pricing is currently driven by the European Union Emissions Trading Scheme (EU ETS). A major obstacle in the short-term for CER monetization is a disconnect between the two major markets – the Kyoto Mechanisms (KM)³ and the EU ETS. In addition, not all CERs are identical in value, raising uncertainty as to pricing and potentially creating disclosure requirements for AF sales, and buyer eligibility is not entirely clear. In this growing, fragmented market, the value of the AF’s CERs will not be certain until they are monetized.

4. *Key recommendations:* CER monetization should be conducted on an ongoing basis, to enable the AF Board to make program and project commitments based on cash in the AF Trust Fund, and as transparently and openly as practicable. An approach based on the following points, with input from the AF Board, will be formalized in guidelines to be approved by the AF Board:

¹ “The Conference of the Parties serving as the meeting of the Parties to this Protocol shall ensure that a share of the proceeds from certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of climate change to meet the costs of adaptation.” Article 12, paragraph 8 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

² The term “monetization” is used as in Decision 1/CMP 3, paragraph 28 of the COP/MOP 3 (Third Conference of the Parties serving as the Meeting of Parties to the KP) and refers to ways to transform CERs into cash.

³ The three Kyoto Mechanisms are “Emissions Trading”, “Clean Development Mechanism (CDM)”, and Joint Implementation (JI)”.

- The AF should **start its CER monetization program only after KP’s International Transaction Log (ITL)**, linking national registries and the CDM, **is connected with the Community Independent Transaction Log (CITL) of the EU ETS**. Market participants expect this to occur by the end of 2008.
- **Market and legal conditions permitting, CERs should be sold quickly, based on the capacity of markets to absorb sales, on an ongoing basis**; this will generate certain cash amounts as well as investment income on liquidity balances.
- The Bank recommends that the **primary method of CER monetization be sales on exchanges and, to the extent possible, with all eligible buyers**; specific over-the-counter transactions with dealer banks, or potentially with governments, may be considered as necessary.
- **CERs should be sold in the spot markets** (as opposed to futures/forwards) for immediate delivery of CERs against payment in cash, to avoid posting of collateral, uncertainty around the availability of cash proceeds for the AF, and more complex transactional and possible regulatory requirements.
- **At the outset, and as long as trading volumes are low, CERs should be sold using straight sales** (as distinct from auctions).
- To help ensure transparency, **final guidelines for CER monetization, and the AF’s approach to CER monetization, should be made public**.
- **It is recommended that the AF Board seek guidance and clarification, from the Conference of Parties serving as the meeting of the Parties to the Protocol at its Fourth Session, as to whether buyers of the CERs from the AF are subject to any eligibility requirements**, including those that apply to Parties or other entities to participate in Emissions Trading under Article 17 of the Kyoto Protocol.

5. Market activity and trends may change and will be closely monitored: it may develop that auction sales are more efficient than sales on exchanges, or that engaging in futures/forward transactions, despite additional costs, is the most effective approach. The World Bank will continue discussions with major dealers and government agencies to review issues important to the AF. Recognizing that CER markets are in early stages of development, and market, legal and regulatory conditions may change, the proposed guidelines will reflect the need for flexibility.

II. Objectives of the Monetization Program

6. **The monetization program will convert the Adaptation Fund’s CERs into cash, to fund adaptation projects.** According to Decision 1/CMP.3, paragraph 28, monetization “shall be undertaken to

- (a) Ensure predictable revenue flow for the Adaptation Fund;

- (b) Optimize revenue for the Adaptation Fund while limiting financial risks;
- (c) Be transparent and monetize the share of the proceeds in the most cost-effective manner, utilizing appropriate expertise for this task.”

7. These objectives set the framework for how the CER monetization program should be structured. It must be noted that it may not be possible to achieve all these objectives at the same time. In certain circumstances tradeoffs between them may have to be considered.

8. **Ensure predictability**. Once the necessary legal arrangement between the COP/MOP and the World Bank becomes effective following the fourth session of the COP/MOP in December 2008, the monetization program should begin as soon as practicable. Guidelines for the program would be authorized by the AF Board and monetizing would be implemented on an ongoing basis. Monetization would take place in advance of formal approvals of AF programs/projects by the AF Board. This will support the AF Board’s decisions about calls for proposals and specific project/program commitments, and ensure predictable funding to support disbursements for AF programs.

9. Once CER markets are sufficiently developed (discussed further below), the ongoing monetization program under the guidelines approved by the AF Board will help ensure that project and program commitments authorized by the AF Board are made on the basis of liquid assets, consistent with best financial management practice. For each AF Board meeting, the trustee would provide the AF Board with information on funds in the AF Trust Fund available for program/project commitment. AF Board authorization of specific projects and programs would then be based on cash levels in the AF Trust Fund. This process would insulate AF commitments from the uncertainties of the CER market.

10. **Optimize revenue; limit financial risks**. An essential function of the CER monetization program will be to obtain full value for the AF’s assets. This would best be achieved in a well functioning, highly liquid secondary market where the CERs can be sold as needed. The better the market functions, the more assurance there is that CER monetization is cost-effective: prices prevailing in the market are appropriate, the cost of price discovery is minimized, and settlement processes are sound. The monetization program itself should help contribute to the liquidity and development of secondary markets in CERs.

11. However, CER markets are young and fragmented, posing pricing, liquidity, clearing and settlement challenges. Specific aspects of the CER monetization program, and recommendations on how to manage it, are discussed in more detail in section IV below.

12. Monetization of CERs is exposed to market risk and credit (settlement) risk. Market risk arises from the impact of carbon price movements on the value of the proceeds of current and future sales of the CERs allocated to the AF. Market risk can be minimized by spreading transactions over time to smooth price fluctuations Credit risk arises from the potential default by buyers of CERs, and can be mitigated by the use of delivery versus payment (DVP)

mechanisms when trading on exchanges, or through counterparty and dealer credit requirements trading over-the-counter.

13. **Transparency.** The monetization program should provide confidence to stakeholders that the pricing and allocation processes are transparent and inclusive.

- **Disclosure of Information:** The guidelines governing the CER monetization program should be disclosed to all stakeholders (including governments, market participant, and producers of CERs). All transactions should be recorded, enabling the comparison of sales prices to market prices. While this would be normal in a mature market, in a new and developing market, full transparency can be difficult to implement and expensive. Where the market is not liquid, full disclosure has the potential to be detrimental to best execution. Nevertheless, given the public international nature of the AF and its role under the Kyoto Protocol – as well as the World Bank’s experience in the capital markets, the Bank believes full transparency is an imperative for a sustainable monetization program.
- **Inclusiveness:** The program should allow the broadest range of compliance buyers to participate in the monetization program, especially major CER buyers (governments and corporations with Kyoto or EU ETS commitments), subject to any eligibility requirements, which may be made applicable to sales of CERs from the AF (as discussed in Section III.C below). Inclusion of as many interested buyers as possible enhances the price discovery process. Conversely, exclusion of big compliance buyers could expose the AF to reputational risk. Large companies, with direct access to carbon markets, could complain publicly if a CER monetization program were to be run exclusively through dealer banks and brokers.

14. **Cost effectiveness.** The most cost-effective approach to CER monetization would be an ongoing program of spot sales in fully functioning, highly liquid markets. This would ensure fair pricing and minimize transaction costs. As the CER market develops, the monetization program should seek to approximate best market conditions wherever possible, and specific principles will need to be followed to balance program objectives in a cost-effective way. For example, if rapid CER sales are needed to support program disbursements, yet market liquidity is limited, over-the-counter (OTC) sales may be the best way to transact large sale volumes and ensure adequate funding. At the same time, OTC sales might require additional startup costs to establish the necessary legal and operational infrastructure to engage in transactions. Alternatively, the AF may want to consider specific offers by governments interested in buying AF CERs. These factors will have to be balanced in specific circumstances, based on considerations of how best to meet the objectives of the CER monetization program.

III. Factors Affecting CER Monetization

15. A number of uncertainties affect the possible value of the AF’s CERs. The CER market is fragmented, affecting the pricing and sale of CERs, and there may be differing valuation of different types of CERs. In addition, the market is affected by uncertainty about the post-2012

regime, which may slow the creation of new projects, reducing the amount of CERs collected for the AF.

A. Current Market for CERs

16. The AF's CERs will be monetized in carbon markets that support secondary trading in CERs. This market is developing quickly but remains fragmented pending completion of settlement infrastructure, and remains subject to uncertainties that affect CER prices and trading volumes.

17. Growing carbon markets. To meet their emission targets under the KP, countries may reduce their emissions through domestic actions, purchase emission rights from others, or buy emission credits from GHG emissions-reducing projects from projects in Annex I countries (Joint Implementation or JI) in developing countries (through the Clean Development Mechanism or CDM). Carbon markets, which originated from the KP, currently represent the bulk of greenhouse gas (GHG) emissions trading. Since their beginning, these markets have experienced considerable growth. In the past few years, trading volumes increased from \$11 billion in 2005 to \$64 billion in 2007 (representing 3 billion metric tons of carbon dioxide equivalent or "CO₂e").

18. The KM (Kyoto Mechanisms) market: The market for CERs doubled in size between 2006 and 2007, reaching 800 million tons (\$13 billion). This market encompasses both a primary market (in which original producers sell CERs) and a secondary market (where already issued CERs are resold). Most transactions occur in the primary market as forward purchases of yet-to-be created CERs. Nearly 140 million tons of CERs have been issued as of May 2008. The development of the secondary market, trading issued CERs, has been hampered so far by the lack of an infrastructure for clearing and settlement. However, several exchanges (European Climate Exchange, Bluenext, Nordpool) are introducing a futures contract for CERs for which they will provide delivery-versus-payment settlement arrangements. The futures contract is dated December 2008, because the exchanges expect the settlement infrastructure for CERs to be completed by then.

19. The EU ETS market is the largest and most liquid market for emissions trading. The EU established the EU ETS as a regional system, consistent with the objectives of the Kyoto Protocol, and inspired by the same flexible cap-and-trade regime. The 2003 emissions trading Directive organized the allocation of EU Emission Allowances (EUAs) for countries to impose targets on some 12,000 installations.⁴ The Directive also authorized the trading of EUAs, which effectively started in January 2005.

20. Under the EU ETS, each member state has developed a national registry with individual accounts for market participants to keep track of the allowances held by capped entities, and to allow for the effective transfer of EUAs from one account to another. National registries are interconnected through the Community Independent Transaction Log (CITL). On this basis, a

⁴ According to Directive 2003/87/ec of 13 October 2003, installations are "stationary technical units" where one or more activities that cause greenhouse gas emissions and any other directly associated activities that have an effect on emissions and pollution are carried out.

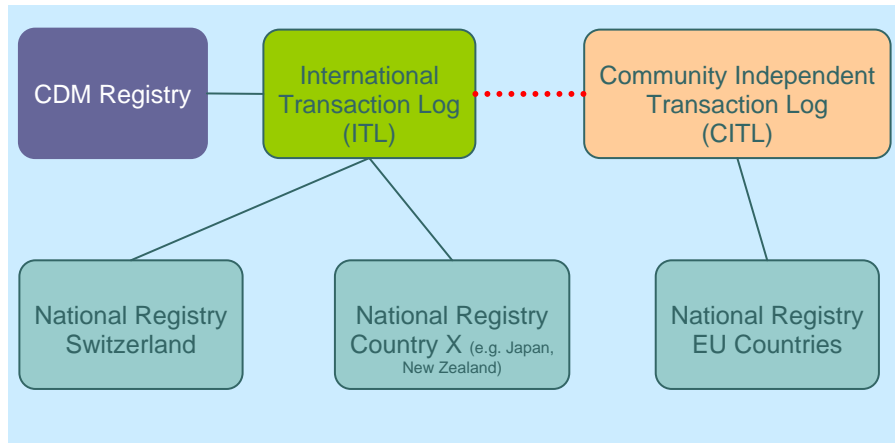
settlement infrastructure was developed, prompting a rapid increase in transaction volumes. The EU ETS quickly became the most active segment of carbon markets. Several exchanges were launched in 2005 offering contracts for spot and future EUAs as well as clearing services including delivery-versus-payment settlement. In 2007, a futures contract for delivery in December 2008 became liquid enough to support the development of financial options on futures. There is now market competition among exchanges (European Climate Exchange, Bluenext, Green Exchange, Nordpool), and between exchanges and OTC trading, for spot and futures trades.

21. Carbon prices in the EU ETS were initially pushed up by the demand from compliance buyers (power producers). When they stabilized, spot and future EUA contracts traded in the range of 20-30 EUR per CO₂e. In April 2006, however, it became clear that, due to limited initial data, allowances (EUAs) for the 2005-07 period had been distributed in excess of the targets. Since these allowances could not be kept for the second period (2008-12), the EUA spot price moved down to zero – where it has remained since February 2007. Meanwhile, the Dec08 Futures contract has stabilized in the range of 20-25 EUR per CO₂e, reflecting the market's expectations for the second period.

22. CER secondary prices are influenced by EUA prices, due to strong market activity around the EU ETS. CERs trade at a discount, currently in the range of 5-10 EUR per CO₂e, relative to EUAs. Factors influencing the spread between EUA and CER prices include the delivery risk on CERs, uncertainty about the connection of the Kyoto and European markets (discussed below), the rules for CER eligibility in the EU ETS, and limits on CER compliance under the EU ETS system. In 2007, CERs with guaranteed delivery were introduced and strongly contributed to the growth of the secondary market.

23. A major obstacle in the short-term for CER monetization is a disconnect between the two major markets – the KM and the EU ETS. When issued, CERs are first placed in a temporary account opened by the buyer in the CDM Registry. Compliance buyers (entities buying CERs to meet their emissions reduction commitments) cannot transfer CERs to their national registry accounts until the ITL, which enables the CDM registry to communicate with all national registries, is connected – in particular to the CITL in the EU. The growth of the secondary market for CERs is thus limited by the inability to transfer CERs freely to national carbon registries. Without a functioning link between the two, the market infrastructure for CER sales is incomplete. It is currently estimated that the KM and the EU ETS may be connected by late 2008, with an expected backstop of April 30, 2009, the EU deadline for surrendering the emission allowances for the last calendar year.

Chart 1: When connected to all registries, the ITL will make CER delivery possible worldwide.



24. As of May 2008, the ITL is connected only to national registries in Switzerland, Japan, New Zealand, and Russia. Once the ITL is linked to more registries – most importantly the European national registries through the CITL – clearing systems are expected to be activated and CER markets for spot and futures can expand.

B. Restrictions on Some Types of CERs

25. Another factor adding uncertainty to the value of CERs is that they are not all identical, so they do not all have the same value. Depending on the type of project they originate from, some CERs are valid only temporarily, and some are not accepted under certain jurisdictions. This may result in difficulties in selling some types of the AF's CERs or in lower proceeds from monetization. In addition, sales may need to be made with disclosure of additional information, adding a degree of administrative complexity.

26. Depending on the type of the project from which the CERs originate, their validity may be restricted. Long-term CERs (ICERs) and temporary CERs (tCERs) are authorized for projects that reduce carbon emissions only for a specific period of time, not indefinitely. For example, ICERs from carbon sink afforestation and reforestation projects expire at the end of the crediting period in which they were issued, while tCERs are only temporarily valid in that they cannot be carried over to another commitment period. Companies are required to replace these certificates before they expire with CO₂e amounts through other valid credits.

27. Some types of CERs, depending on the project they originate from, are not accepted under certain jurisdictions. The complex rules governing the non-eligibility of certain categories of CERs under the EU ETS are worrisome to market participants, and thus for the AF wanting certainty around CER sales. An example of this point is the issue of the acceptability of CERs from hydropower projects, for which the size of the dam in the project can be decisive in whether it may be sold in the European Union.

C. Eligibility of Purchasers of AF CERs under the Kyoto Protocol

28. Article 17 of the Kyoto Protocol provides that Annex I Parties with emission limitation and reduction commitments may engage in Emissions Trading for the purpose of fulfilling their commitments under Article 3 of the Kyoto Protocol. Specifically, Parties may acquire CERs and other units from other Parties and use them towards meeting their emissions targets under Article 3. Decision 11/CMP.1 sets out the rules and guidelines, including the eligibility requirements,⁵ for Parties to participate in Emissions Trading. Thus, acquisition of CERs among Annex I Parties (or entities authorized by such Parties) under Article 17 is restricted to certain Parties or entities.

29. For the purpose of providing assurance to potential buyers and other interested parties, it is recommended that the AF Board seek guidance and clarification from the Conference of Parties serving as the meeting of the Parties to the Protocol at its Fourth Session, as to whether buyers of the CERs from the AF are subject to any eligibility requirements, including those that apply to Parties or other entities to participate in Emissions Trading under Article 17 of the Kyoto Protocol. Clarifying the eligibility requirements applicable to sales of AF CERs will ensure that the CERs can be delivered to buyers.

30. Since transfer of CERs from the AF account at the CDM Registry to buyer accounts at national registries is subject to verification by the ITL of the eligibility of the Parties involved in the transaction, the clarification on the eligibility requirements would be important also from the perspective of ensuring delivery of the CERs to the buyers upon completion of the sales transactions.⁶

D. Estimated Value of AF CERs

31. Another factor determining the nature and pace of the monetization program will be the fact that it depends on the volume of sales of CER available. The AF's CERs are part of the KM market. The CDM registry forwards two percent of newly issued CERs to the AF's registry account, so that the AF receives two percent of CERs issued for a CDM project activity. The AF account currently holds almost 3 million CERs, with an estimated worth of about 45 million EUR using the 2007 average price.

32. There are uncertainties regarding the potential size of the AF. The estimated total possible amount of CERs to be issued by the CDM would be approximately 2.5 billion tons by 2012, based on the pipeline of projects registered in the CDM. This figure should be reduced to 1.6 billion tons when risk-adjusted to take into account that projects have historically delivered lower amounts of CERs than originally expected.⁷ Some major banks have indicated a risk-adjusted estimate at 1.5 billion tons, anticipating bottlenecks in the CER origination process of the CDM, possible rejections of calculation methodologies and a tendency for the creation of

⁵ See, paragraph 2 of Annex to 11/CMP.1.

⁶ See Decision 13/CMP.1.

⁷ Source: cdmpipeline.org as of May 21, 2008. The risk adjustment is based on the historical ratio of project-based emission reductions that are authorized as CERs divided by the amount of emission reductions submitted for approval.

new emission-reducing projects to slow because they have no guarantee to sell CERs beyond 2012.⁸ As of May 2008, 139 million CERs have been issued and there are around 2.8 million tons in the AF account. The estimated amount of CERs to be allocated to the AF would therefore be around 32 million CERs. These amounts will be spread over the 2008-2012 period.

33. The potential volume of CERs after the first commitment period of the Kyoto Protocol is unknown. The lack of a regulatory framework after the first commitment period of the Kyoto Protocol leaves uncertainty with respect to the future level of funding of the AF.

IV. Design of the Program

34. To monetize the AF CERs, the AF Board would first authorize the monetization guidelines to be proposed by the World Bank. Under the guidelines, the execution of specific trades would occur as follows. The Bank acting as AF trustee would sell to an eligible counterparty either on an exchange or over the counter, as discussed below. The Bank would notify its clearing and settlement service provider, which would settle the trade on a delivery versus payment basis. That is, the CER would be transferred from the AF account in the CDM registry to that of the buyer in the national registry, while the buyer's cash payment would be transferred from the buyer's account to the AF Trust Fund cash account. The cash proceeds from the monetization would be held in the AF Trust Fund prior to their allocation by the AF Board.

35. It is recommended that the AF Board consider five parameters and their impact on achieving the core objectives of the CER monetization program. Based on the design principles inherent in these parameters, and further information as the CER market evolves, specific guidelines will be developed for approval by the AF Board. The key issues for consideration include when to start monetization; how sales should be timed; whether sales should be made on exchanges or over the counter; whether CERs should be monetized through spot or forward/future transactions; and whether CERs should be auctioned or sold directly?

A. Start of Monetization

36. As described above, carbon markets are split into KM markets, or markets for project-based transactions directly derived from the Kyoto Mechanisms (around 0.9 billion CO₂e), and markets for emission allowances of the EU ETS, the internal system created by the EU that places emission caps on EU utilities within specified sectors (2.1 billion CO₂e). As long as the two markets are not connected, CERs cannot be transferred to the national registries of the EU, where many potential buyers are located and where prices per CO₂e are higher. CER secondary prices are influenced by EUA prices, but as noted CERs trade at a discount in the range of 5-10 EUR per CO₂e relative to EUAs.

37. The decision on when to start monetization may pose a tradeoff between availability of cash, on the one hand, and optimizing the AF's revenues from monetization on the other. The

⁸ There are a number of bottlenecks in the CER registration/issuance cycle. The 1.5 billion ton figure reflects information gathered through interviews with London-based carbon dealers in March 2008. The State and Trends of the Carbon Market 2008 report mentions a range of 1.4 – 2.2 billion.

sooner the monetization program starts, the sooner funds will be available. However, as long as the KM and the EU ETS are disconnected, the AF risks receiving lower proceeds from monetization, as its sales would remain subject to significant uncertainties.

38. Fortunately, it is possible that the AF will not have to face this tradeoff directly, given the possibility that the connection will occur this year, and that monetization cannot begin until the legal arrangement with the COP/MOP becomes effective following decision by the COP/MOP at its fourth session at the end of 2008. The current expectation is that markets will be connected and functional by the time of the COP/MOP decisions about the AF at the end of 2008, with an expected backstop of April 30, 2009, the EU deadline for surrendering the emission allowances for the last calendar year.⁹ Market participants expect the connection before the end of 2008, as evidenced by the March 2008 launch of a future Dec08 CER contract by the European Carbon Exchange featuring CER delivery (versus payment) in December 2008.

39. In the event that the markets are not connected and the AF needs to move forward with monetization after the COP/MOP decision, alternative routes are possible. CERs may be sold and delivered to non-EU buyers. For example, the registries in Japan, Switzerland, New Zealand, and Russia are already connected to the CDM registry through the ITL. Some exchanges are considering offering to deliver CERs on one of the registries already connected to KM. For example, Bluenext has announced its intention to use the Swiss Registry. Also, some brokers and investment banks propose to clear transactions and hold CERs on behalf of their clients in their own accounts in the national registries.

40. But these alternatives have shortcomings. The Swiss registry solution, for example, would require a CER buyer to open a temporary account in Switzerland. Later, when the CITL is connected to the CTL, the CERs would have to be transferred to the national registry of the buyer. The CERs held in Switzerland would not be accepted for compliance in EU countries. These alternatives are now used as specific arrangements to accommodate urgent buyer needs. They are interim solutions, and as such they are not sustainable, do not support transparent and sound CER trading, and do not promote the development of the market.

41. Given the strong expectation that the markets will be connected by the end of 2008, the Bank recommends starting monetization after the European and Kyoto markets are connected. The development of secondary CER markets should accelerate when the settlement infrastructure is complete. The volume of transactions should increase, with more information on prices and enhanced transparency. The AF would then benefit from the more permanent and efficient infrastructure. If the markets are not connected by the end of 2008, in a timeframe needed by the AF, the Bank will revise these recommendations to the AF Board and present specific short-term funding options based on then-existing market conditions and limitations.

⁹ The European Union Directive 2004/101/EC, paragraph 5, provides that the two markets will connect. According to a Commission staff working document from February 23, 2008, the two markets should be connected with the start of the first commitment period under the Kyoto Protocol, which would require connection no later than April 30, 2009, when European buyers have to surrender their certificates.

B. Sales Timing

42. Once the monetization program is up and running, when should the AF sell its CERs? The value of the CERs may go up or down; early or late sales may increase or decrease their overall value. As noted above, to ensure predictability as well as good financial practice, the Bank recommends that the AF Board allocate or commit funds only when they are already monetized. Because CER prices are volatile; it would be difficult to estimate the funds available for allocation, and the AF could expose itself unnecessarily to the risk of not being able to live up to its commitments. This implies that monetization should proceed reasonably quickly, once the right market and legal conditions are in place.

43. The Bank recommends that the AF's CERs be sold with appropriate speed on an ongoing basis. This will generate certain cash amounts, as well as investment income on liquidity balances. Sales would take into account the capacity of the carbon markets to absorb the AF's CERs. This would ensure predictability for the AF Board, enabling it to commit AF funds certain of their availability when needed. It would also provide flexibility to optimize revenues to the AF, since it would help avoid a need to sell on an urgent basis.

44. Sales of the AF CERs would thus be conducted with appropriate speed, with specific sales spread over time, for example on a daily basis assuming favorable market conditions. This will average sales prices and smooth possible price fluctuations. Ongoing sales could be made with regard to the average trading size for CERs on the selected exchanges. (As a reference, daily trading volumes for EUAs on the European Climate Exchange (ECX) are currently 20,000 tons. The daily trading volume on the ECX is 8 million tons.) Daily trading volumes on the main exchanges offering CER contracts would be monitored, so that the sales program can respond to changes in the market environment. This will help prevent the possibility of AF sales being made when the market cannot absorb them, which would risk lower prices. This approach would also be more likely to support the development of the carbon markets, providing some expansion and avoiding disruption.

C. Exchange-Based (to Eligible Buyers) or Over the Counter (to Dealers)

45. The Bank recommends that the primary method of CER monetization be sales on exchanges and open to all eligible buyers. Sales would be executed at market price, on an anonymous basis, and would be accessible to all market participants.

46. Under the circumstances of a large and transparent market, exchange-based trading is a transparent, inclusive, and fair way for monetizing CERs. All market participants have access to the trading, price settlement is subject to objective market mechanisms, and the market can absorb the offered CERs. Exchanges provide efficient clearing and transparency. For EUA trading, exchanges have developed delivery versus payment settlement processes which eliminate credit and settlement risk. Exchanges plan to offer the same trading and clearing services for CER trading to be built around the ITL-CITL systems link. The use of exchange-based trading also favors transparency, since their electronic trading infrastructure records all transactions. Trading on several exchanges could be considered. Regional exchanges may have limited access to buyers from other regions; this could be addressed by trading on several

exchanges. Subject to inquiries into laws of the jurisdictions in which exchanges are located to ensure that there would be no impediments to engaging into sales for the AF, exchanges could be selected based on liquidity criteria: volume of trades, market share. This would be advisable from the point of view of neutrality, if the liquidity in carbon markets is split between two or three major exchanges.

47. The Bank expects the exchanges to be sufficiently developed for the AF monetization program after the European and the Kyoto markets are connected for several indicators:

- Some EU ETS exchanges have established their franchise in trading EUAs. The European Climate Exchange (ECX) is the market leader, with around 1 billion tons traded in 2007 and daily transactions at about 8 million tons. The ECX EUA futures contracts, particularly the EUA futures Dec08, attract significant liquidity.
- Several exchanges trade or plan to start trading CER contracts. The main competitors – ECX, Bluenext, Green Exchange, and Nordpool – trade or plan to launch CER contracts. Over time, the exchanges expect that CER contracts will gain the same liquidity as in EUA trading.
- Compliance buyers as well as dealers trade on exchanges. ECX currently has 88 members, including dealers (e.g., Deutsche Bank, Goldman Sachs, Barclays) as well as large compliance buyers (e.g., Endesa Generacion, Shell Energy Trading). Exchanges can help ensure trading inclusiveness (enabling compliance buyers to have access to the AF CERs either through dealers or directly on the exchange). They also ensure minimal credit/settlement risk because of their delivery versus payment function.

48. The Bank recommends selling directly to eligible buyers on exchanges. Sales transactions with dealers may be easier to implement and more flexible than dealing with compliance buyers. In restricting the counterparties to a small number of dealer banks, certain forms of transactions can be facilitated. Settlement risk can be managed by limiting counterparties to a specific list of eligible creditworthy banks. Working with dealers can provide additional flexibility and needed support for transactions aimed at specific objectives. Selling only to dealers could be highly inclusive, but nonetheless invite criticism from compliance buyers. Working exclusively with dealers, the monetization program of the AF could still ensure a wide distribution of its CERs to compliance buyers. Sales could be conducted similar to bond issues, with mandated dealers responsible for wide placement of CERs. However, there is a real risk, which dealers themselves mention, that such an approach could be perceived by large and influential compliance buyers as excluding them or placing them at a disadvantage relative to banks.

49. At the same time, limiting CER sales only to exchange-based trading might in some circumstances hamper the efficiency of the monetization program. The average transaction size is still quite small on ECX, with the average futures EUA transaction around 12,000 tons.¹⁰ Large blocks cannot be traded. Block trades are typically arranged by dealers (although they may be cleared on exchanges). The AF's specific cash funding requirements will have to be

¹⁰ Information on the ECX was obtained in a meeting with the CEO held in March 2008.

compared to the volume of funding coming from conducting a program of regular sales. If the expected funding commitment needs of the AF require an acceleration of the pace of the monetization program, specific transactions over-the-counter with dealer banks (or, if appropriate, with governments) should be considered. In addition to this flexibility, establishing relationships with dealers in this growing market can be advantageous. It would give the monetization program the benefit of improved market intelligence, and the flexibility to plan specific transactions to optimize the inflow profile of CER sales.

D. Spot or Forward/Futures¹¹ Transactions

50. The Bank recommends that the AF sell CERs in spot transactions. Spot transactions result in immediate, certain cash proceeds, and avoid a number of significant complications associated with forward and futures transactions. Spot transactions are less complex, and would not require the extra time and costs associated with establishing financial and legal arrangements for forward and futures transactions:

- Selling futures entails the provision of collateral, or “margin”, to the exchange and clearing house, to mitigate its risk in acting as a counterparty to all trades. An initial margin deposit is required whenever a futures position is opened. With market movements, the margin is recalculated over time, resulting in margin adjustments and the possible provision of additional collateral until the futures contract is closed. (The collateral is returned when the contract expires or is closed.)
- A forward (over-the-counter) sale is a derivative transaction, requiring the establishment of swap trading relationships with banks. This implies entering into master swap agreements and establishing credit arrangements, which may include the provision of collateral, and would necessitate specific operational capacity.
- Futures and forward transactions bear the risk that CERs cannot be delivered if the EU and KM markets are not connected. On the settlement date, the AF would have to deliver the CERs according to the futures contract to a specified national registry or buy back its short position at the market price, effectively closing out the futures position and its contract obligations.

51. Ideally, CER sales should be conducted in the most liquid segment of the market, and most of the liquidity on EUA and CER markets is now in forward/futures transactions. Liquidity makes trading easier, reduces bid/ask spreads and may ensure more price visibility. However, engaging into forward or future transactions would raise several operational, financial and legal issues. The complexity of the transactions would require additional time and costs, particularly in establishing the infrastructure for such transactions. Those costs, including provision of collateral, would reduce the cash otherwise available for commitments

¹¹ Spot transactions are purchases and sales of CERs at a specified price for delivery at the same time. Futures transactions are standardized agreements traded on futures exchanges, to buy or sell CERs at a certain date in the future, at a specified price. Forwards are also agreements to buy or sell CERs at a certain date in the future, at a specified price, traded over the counter and thus not standardized.

for concrete projects/programs. Engaging in future or forward transactions would likely also raise regulatory issues.

52. CER trading on the secondary market is becoming more active, and additional efficiency and risk reduction is expected once the connection between the ITL and CITL is complete. By the time the AF's monetization program will commence, it is expected that the spot markets will have sufficient liquidity to support efficient spot trading.

E. Auctions or Straight Sales

53. At the outset, and as long as trading volumes are low, the Bank recommends straight sales. Straight sales on exchanges at market prices (with transaction records) are a good approach, particularly for low volumes. Small, frequent sales of CERs in a liquid exchange would not disrupt the market and would result in obtaining the average market price over the sale period. Germany has asked KfW to run a program of EUA sales on the ECX at market prices for 40 million tons per year.¹² KfW sells 100,000 tons every day in multiple trades, without moving the market.

54. However, several EU governments (which typically auction their sovereign bonds) are preparing to auction a fraction of their EUAs rather than distribute them for free, within the limits authorized by the EU ETS. Auctions are a mechanical process that removes discretion and favors neutrality and objectivity, particularly if conducted on a regular basis. The AF may benefit from the experience of governments in the EU ETS.

55. Auctions require sponsorship of a core group of dealers to be run efficiently. If auctions are conducted among a restricted group of dealers, the process is made easier but may result in discrimination or perceived discrimination against non-dealers. An auction conducted on an exchange is inclusive and creates no credit risk. However, such trades cannot be executed as ordinary trades. Auctions can result in a non-market price, especially if certain buyers attempt to arbitrage these auctions. This risk can be mitigated by having a core group of dealers participating.

56. While it makes sense to begin with straight sales on exchanges, the question of whether the use of straight sales or auctions is preferable should be monitored and revisited as necessary.

¹² Based on contacts established with the KfW Treasury

V. Summary of Discussion

57. The following table summarizes how an appropriate design of the monetization parameters can support the objectives of the monetization program. It also reveals tradeoffs between the design of some parameters in order to meet the objectives.

	Optimize revenues	Risk	Transparency	Inclusiveness	Cost effectiveness	Funding availability
Start of monetization	after connection	after connection	after connection	after connection	after connection	before connection
Exchange vs. OTC	more developed market	exchange	both (exchange)*	exchange	OTC	OTC
Spot vs. futures	more developed market	spot	whichever market is more developed	spot	spot	spot
Auction vs. straight sales	straight sales	if OTC then depends on buyers. None if exchange	depends on development of the market**	both	straight sales	auction***

* Both, transactions over exchanges and over the counter can be carried out in a transparent way. However most exchanges have rules in place ensuring transparent transactions, while in OTC transactions, the transaction counterparties are responsible for creating transparency. The World Bank as a trustee would carry out OTC transactions (if they are required) in a transparent way.

** Auctions can function as a transparent price-finding mechanism. If a developed and transparent market for sales (for example on exchanges) exists, straight sales are a transparent way to monetize. If no developed and transparent market for sales exists, auctions are a transparent alternative.

*** For ongoing, low-volume sales both auctions and straight sales are suitable. If the volume of monetization needed exceeds the absorption capacity of the markets, auctions are a transparent price-finding mechanisms for bulk monetization.

APPENDIX I: BACKGROUND ON CARBON FINANCE

I. The Kyoto Mechanisms

58. Certain signatories to the KP (the so-called Annex I countries: 38 industrialized countries and 11 countries with economies in transition) agreed to reduce their GHG emissions by 5.2% below their 1990 levels by the end of the first commitment period (2008-2012).

59. The Kyoto Protocol (KP) offers three market-based mechanisms that will assist Annex I countries (developed countries and economies in transition) to supplement their national efforts to meet the targets of the Kyoto Protocol. These mechanisms exploit the opportunities arising from the differences in the cost of reducing greenhouse gas emissions in different regions and the fact that the impact on and benefit to the atmosphere is the same.

60. The three mechanisms are the Clean Development Mechanism (CDM), the Joint Implementation (JI), and the Emission Trading. The CDM allows developed countries and transition countries to sponsor projects that reduce greenhouse gas emissions in developing countries in return for Certified Emission Reductions (CERs) that they can use against their own KP greenhouse gas reduction targets. The JI allows developed countries and transition countries implementing project activities that reduce emissions in other developed or transition countries in return for Emission Reductions Units (ERUs). The emission trading scheme allows developed countries and transition countries to trade among themselves some of their Assigned Amount Units¹³ (AAUs), acquired CERs, ERUs, and Removal Units¹⁴ (RMUs).

II. Clean Development Mechanism

61. The CDM offers developed countries an alternative to reducing their own emissions. It allows them to purchase CERs. These CERs are generated by projects located in developing nations which provide emission reductions that are additional to what would otherwise have occurred. One CER equals 1 ton CO₂e.¹⁵

62. A project must follow specific steps to produce CERs. The CDM Executive Board will validate the compliance of the project with certain requirements and will formally accept it as a CDM project. The acceptance by the CDM means that emission reductions (ERs) generated by the project may be used by countries to meet their KP targets. The CDM Executive Board will verify ex-post the amount of CO₂e reductions generated over a period of time by the project activity and will issue and certify these ERs (CERs).

63. The holding, transfer and acquisition of CERs and the other Kyoto Units¹⁶ is tracked and recorded through a system including three components. Each Annex I country maintains a *national registry* which contains accounts for holding the country's Kyoto Units as well as

¹³ Kyoto Target

¹⁴ A removal unit issued by an Annex I Party on the basis of land use, land-use change, and forestry (LULUCF).

¹⁵ Greenhouse gases can be translated into a CO₂ equivalent (CO₂e).

¹⁶ CERs, ERUs, AAUs and RMUs.

those held by any legal entity authorized by the country. Transfer and acquisitions of CERs between entities take place through these national registries. An *International Transaction Log (ITL)* verifies transactions as they are proposed, including their issuance, transfer and acquisition between registries. The *CDM Registry* contains CER accounts for the developing countries participating in the CDM and for the AF. The CDM Registry also contains temporary accounts for Annex I project participants (which typically have been purchasing CERs) until the ITL is fully connected to all registries.

64. Upon being instructed by the CDM Executive Board to issue CERs, the CDM registry administrator issues specified quantity of CERs. The CDM registry forwards two percent of the CERs issued to the AF account and forwards the remaining CERs to the registry accounts of countries and project participants involved, in accordance with their request.

III. European Emissions Trading Scheme (EU ETS)

65. The trading of carbon assets has considerably developed in the last couple of years especially in Europe with the establishment of the EU ETS. The EU ETS was established to help the European countries to meet their individual commitments under the Kyoto Protocol. The EU ETS is in its second phase from 2008-2012 and is expected to reduce emissions 8% below the 1990 level.

66. Under this scheme, entities must hold emission permits (allowances - EUA) in order to be able to emit CO₂e. Each country establishes a National Allocation Plan (NAP) that sets the nominal emission reductions that will be achieved during a period and creates the allowances that could be traded to help the entities to meet their targets. The NAPs are approved by the European Commission. In addition, the EU ETS allows the use of CERs to help the European countries to meet their emission targets. All CERs except those from nuclear facilities and land use, land-use change and forestry activities may be accepted.¹⁷ However, each NAP specifies a maximum amount of CERs (and ERUs) that may be used for compliance purposes by operators in the EU ETS. The EUA represents 1 ton of CO₂e and is fungible across European countries.

67. Each EU country has a Registry used to record the holding and transfer of all issued EUAs. These registries have accounts for each entity that wish to participate in trading. The registries are linked through a Community Independent Transaction Log (CITL) that records all the transfers of allowances between parties. The CITL needs to be linked with the ITL in order to transfer the CERs issued by the CDM into the EU ETS.

¹⁷ There is uncertainty regarding the use of credits originated from hydroelectric projects with a generating capacity exceeding 20MW which may not be utilized for compliance under the EU-ETS.

APPENDIX II: GLOSSARY

Adaptation Fund Trust Fund

Trust fund for the AF established by the trustee. Returns from monetization of CERs, investment income and any contributions to the AF Trust Fund will be held in the AF Trust Fund prior to disbursement on AF Board-approved programs and projects.

Annex I countries/Parties

Parties include the industrialized countries that were members of the OECD (Organisation for Economic Co-operation and Development) in 1992, plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States.

Annex B countries/Parties

Countries included in Annex B to the Kyoto Protocol that have agreed to a target for their greenhouse gas emissions.

Assigned Amount Unit (AAU)

Assigned Amount Units are the quantity of greenhouse gases that an Annex I country can release in accordance with the Kyoto Protocol, during the first commitment period of that protocol (2008-12).

Cap-and-trade system

A system under which a government or international body sets a cap on the amount of emissions a polluter can emit and issues allowances accordingly. Polluters are required to hold allowances which represent the right to emit a fixed amount of emissions. Polluters that exceed their fixed amount can buy allowances in the market. Polluters that fall below their fixed amount can sell their allowances.

Carbon dioxide equivalent (CO₂e)

The universal unit of measurement used to indicate the global warming potential of each of the six greenhouse gases. Carbon dioxide – a naturally occurring gas that is a byproduct of burning fossil fuels and biomass, land-use changes, and other industrial processes – is the reference gas against which the other greenhouse gases are measured.

CDM Registry

Electronic database managed by the UNFCCC secretariat, serving as the CDM registry administrator, into which CERs are issued from CDM projects and from which CERs are distributed to national registries.¹⁸

Certified Emission Reduction (CER)

A certified emission reduction is a carbon credit worth 1 metric ton of avoided or reduced carbon dioxide equivalent under the rules of the KP. CERs are issued by the CDM Executive Board and recorded in the CDM registry.

¹⁸ "Registry systems under the Kyoto Protocol." United Nations Framework Convention on Climate Change. UNFCCC. 20 May 2008 <http://unfccc.int/kyoto_protocol/registry_systems/items/2723.php>.

Clean Development Mechanism (CDM)

The mechanism, defined in Article 12 of the Protocol, permits countries with an emission-reduction or emission-limitation commitment (Annex B Party) to implement emission-reduction projects in developing countries. These projects earn CERs that can be counted towards meeting Kyoto targets.

Community Independent Transaction Log (CITL)

The CITL records the issuance, transfer, cancellation, retirement and banking of allowances that take place in the national registries of EU Member States.¹⁹

Delivery Versus Payment (DVP)

Delivery of a security or a commodity contingent upon receiving payment in cash. This is the norm for settling securities on major international exchanges in order to reduce the risk in the settlement of the transaction.

Emissions Reduction Purchase Agreement (ERPA)

Agreement which governs the purchase and sale of emission reductions under the Kyoto Protocol.

Emission Reduction Unit (ERU)

A unit of emission reductions issued pursuant to Joint Implementation. This unit is equal to one metric ton of carbon dioxide equivalent and is usable against a country's Kyoto targets.

Emissions Trading

Emissions trading, defined in Article 17 of the Kyoto Protocol, allows countries to sell emissions in excess to their emissions targets to countries that are over their targets. Emissions trading is one of the three KM.

EU Emission Allowance (EUA)

EUAs are the allowances in use under the EU ETS. An EUA unit is equal to one metric ton of carbon dioxide equivalent.

European Union Emissions Trading Scheme (EU ETS)

The EU ETS is the European Unions emission trading mechanism. It was launched on January 1, 2005 as part of EU climate policy towards its Kyoto commitment and beyond. In its first phase from 2005 to 2007, the EU ETS regulated CO₂ emissions from energy intensive installations representing some 40 percent of EU emissions. Those emissions were capped at 6,600 CO₂ over the 2005-2007 period. Following this pilot phase, extending from 2008 to 2012, an average annual cap at 5.8% below 2005 verified emissions was set. To meet their compliance requirements, installations may use EUAs, CERs and ERUs (the latter for Phase II only). Further information may be found at <http://ec.europa.eu/environment/climat/emission.htm>

¹⁹ "Emission Trading Scheme (EU ETS)." [Europa-Environment](http://ec.europa.eu/environment/climat/emission/citl_en.htm). 16 May 2008. EU. 20 May 2008 <http://ec.europa.eu/environment/climat/emission/citl_en.htm>.

Forward Contract

A forward contract is a non-standardized contractual agreement traded over the counter, to buy or sell a particular financial instrument or commodity at a certain date in the future, at a specified price.

Futures Contract

A futures contract is a standardized contractual agreement, traded on a futures exchange, to buy or sell a particular financial instrument or commodity at a certain date in the future, at a specified price. A futures contract has lower risk than a forward contract because it is (i) marked to market on a daily basis and (ii) the settlement failure risk is borne by an exchange.

International Transaction Log (ITL)

The ITL links together the national registries and the CDM registry and is in charge of verifying the validity of transactions (issuance, transfer and acquisition between registries, cancellation, expiration and replacement, retirement and carry-over). It is the centerpiece of the emissions trading under the Kyoto Protocol. At present it is connected to the CDM registry and Japan's, New Zealand's, the Russian Federation's, and Switzerland's national registries. Connections to other national registries are currently being implemented.

ITL-CITL Connection

ITL and CITL are the transaction logs that check if transactions between registries fulfill the requirements of the KM and the EU ETS respectively. Currently ITL and CITL are disconnected impeding the transfer of CERs issued under the CDM to national registries in the European Union. The connection, originally scheduled for 2007, has been delayed.

Joint Implementation (JI)

The mechanisms, defined in Article 6 of the Kyoto Protocol, allows Annex B Parties to earn ERUs from an emission-reduction or emission removal project in another Annex B Party that can be counted towards meeting its Kyoto target.

Kyoto Mechanisms (KM)

The three flexibility mechanisms that may be used by Annex I Parties to the Kyoto Protocol to fulfill their commitments through emissions trading (Art. 17). Those are the Joint Implementation (JI, Art. 6), Clean Development Mechanism (CDM, Art. 12) and trading of Assigned Amount Units (AAUs).

Linking Directive EU-ETS

The Linking Directive allows for the import of CDM emission reduction credits from activities located in developing countries and tapping mitigation potentials in the industry, in the waste management sector, in the mining sector, etc.

Long-term CERs (ICERs) and Temporary CERs (tCERs)

Long-term CERs (ICERs) and temporary CERs (tCERs) are granted for projects that remove (sequester) carbon from the atmosphere and store it in vegetation and soil through afforestation and reforestation projects. These projects carry the risk of non-permanence, because the sequestered carbon could be released to atmosphere as a result of natural or human disturbances. Hence the credit is only issued and renewed for as long as the carbon is sequestered, and up to a maximum of 60 years. A ICER is issued (pursuant to Article 12 of the Kyoto Protocol) for an afforestation or reforestation CDM project activity, which expires at the end of the crediting period of the project activity for which it was issued (20 or 30 years). A tCER is issued (pursuant to Article 12 of the Kyoto Protocol) for an afforestation or reforestation CDM project activity, which expires at the end of the commitment period (5 years). Both tCERs and ICERs are subject to a 5-year verification cycle. The national registries have to include a tCER replacement account for each commitment period in order to replace them before expiry with other emission certificates (AAUs, CERs, ERUs, RMUs and/or tCERs).

Monetization

The term “monetization” follows the way it is used in COP/MOP Decision 1/CMP.3. Monetization is a transaction that transforms CERs into cash.

National Allocation Plan (NAP)

Documents, established by each Member State and reviewed by the European Commission, that specify the list of installations under the EU ETS and their absolute emissions caps, the amount of CERs and ERUs that may be used by these installations as well as other features such as the size of the new entrants reserve and the treatment of exiting installations or the process of allocation (free allocation or auctioning).

Over-the-counter (OTC)

Over-the-counter transactions refer to the trading of financial instruments directly between two parties. By contrast, exchange transactions refer to the trading of financial instruments through corporate entities such as stock or futures exchanges.

Primary market transaction

A primary market transaction is a transaction between the original owner (or issuer) of the carbon asset and a buyer.

Secondary market transaction

A secondary market transaction is transaction where the seller is not the original owner (or issuer) of the Carbon asset.

Spot Transaction

Purchase or sale of an underlying instrument at a specified price for immediate (normally not more than two days) delivery. By contrast, a forward transaction is the purchase or sale of an underlying instrument at a specified price for delivery on a fixed future date.