THE WORLD BANK CARBON FINANCE APPROACH TO DETERMINING PRICE RANGES FOR ERPAS

In order to fully commit the funds already entrusted to the World Bank by carbon fund Participants, the Carbon Finance Unit of the Bank (CFU) need to offer fair prices for projects that meet our strategic criteria. Offering uncompetitive prices is also inconsistent with the CFU objective of ensuring equitable benefit sharing. In addition to offer fair prices, the process needs to be transparent to ensure credibility from the Host Countries' perspective and to promote durability of the emission reductions purchase agreement (ERPA) contracts.

The CFU has developed an approach by which it will seek to establish a transparent, fair, consistent pricing. The approach, outlined below, is expected to achieve three objectives:

- Offer project sponsors a fair price for their emission reductions,
- Improve transparency in the market for greenhouse gas emission reductions and
- Seek to attain the World Bank's objective of fully committing the resources placed in the CFU trust by carbon fund Participants.

Determining Fair Prices

With the carbon market yet to mature, current market imperfections are pervasive. Transactions are few (though increasing), heterogeneous[1], and usually private, so that there is limited transparency of information on the structure and terms of specific transactions and their underlying projects. In many cases, the Bank purchases "verified" emission reductions (VERs) which, once delivered, will not necessarily be eligible under the Kyoto Protocol. Even the Kyoto-eligible Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs) carry the risk that they will not be delivered by a project and/or project sponsor/guarantor (although they will largely be fungible once issued). The heterogeneity of (a) the types of *emission reductions* (VERs, CERs, ERUs and EU Allowances), (b) the uniqueness of each *underlying project*, and (c) dependence on *who bears the risks* between buyers and sellers under emission reductions purchase agreement, results in heterogeneity in the prices paid for the emission reductions[2].

In the absence of a well-informed market, the CFU developed a proxy for "fair price" for each transaction by pricing off a benchmark (or reference price) adjusted for risk. The method and risk components are described below.

Method: The approach for pricing ERPAs starts with the selection of an appropriate ERPA transaction, the Benchmark, whose price should represent, to the extent possible, the price that other market players have recently paid for similar transactions. The benchmark is then be adjusted by adding/subtracting premia/discounts for risk

[1] Emission reductions purchased by the Bank (on behalf of Participants) are highly heterogeneous when compare to allowances traded under the Emissions Trading Scheme (ETS).

[2] Certified emission reductions (CERs) are the commodities created under one of the flexible mechanisms (Clean Development Mechanism – CDM) defined in the Kyoto Protocol. The Protocol was signed by over 150 Countries in 1997, in Japan, and entered into force in February of 2005.

components embedded in ERPAs, to obtain price ranges for each transaction. These price ranges set the guidelines for pricing that the Bank's Carbon Funds apply to each new ERPA transaction.

Criteria for Benchmark: A representative "benchmark" transaction is identified for which the market has relatively complete information regarding the key determinants of price, notably the risks of the underlying project, the eligibility of the emission reductions under the Kyoto Protocol and the EU Emissions Trading System, and the structure of the contract. The first attempt to define the benchmark price is based on a standard emission reduction purchase contract for Certified Emission Reductions (CERs), without any delivery guarantee, without advance payments, with no additional premia/discounts applied (please refer to the section "Other price premia/discounts"), and with relatively low risk and early delivery of a substantial volume of emission reductions.

The benchmark price is reviewed periodically or if any significant market evolution or price discovery event is observed. To avoid the risk that the Bank would follow unilateral and inconsistent moves from a specific seller and to assure the benchmark chosen reflects global market trends, CFU staff constantly consult other players in the market and monitor external transactions and general market conditions. Alternative methods to find representative transactions may be used, such as surveys, auctions and external transactions, where the details of the structure of the deal are sufficiently known.

Additionally, the consultation with other players and the monitoring of the market shall continuously indicate if this benchmark is still valid or if new global price trends are observed. In that case, a new benchmark, coherent with the market trends, will be proposed.

Risk spreads and other price adjustment factors

Price spreads are estimated for risk attributes related to the project and transaction. Adjustments are made to this reference price which will reduce the offer price for emission reductions to compensate for risks of non delivery and replacement of CERs. The following adjustments are considered in calculating risk spreads:

- **Risk Factors**
  - **Project (or Credit) risk**: This is related to the riskiness of the underlying project and the likelihood that the project will be constructed on time and will remain fully operational during the contract period. Common risks associated to the project include financial viability, the legal and regulatory framework for operations, financial structure of the project and solvency of the sponsors, sector and project competitive strengths. The CFU applies a premium/discount related to the creditworthiness of the seller and the proposed transaction, when compared to the benchmark adopted. Sophisticated sponsors, with healthy financial situation, operating under a well tested environment (i.e. Country, sector), and proposing a project with financial closure shall be granted the premium, while the opposite scenario shall be reflected in terms of a similar discount.

- **Kyoto regulatory risks,** which include project registration, CER issuance and crediting period renewal**.**
    - **Registration of the project:** These are risks related to project validation and registration, including risks associated with CDM regulatory risks (e.g. decisions on the approval of methodologies, eligibility and additionality criteria, validation, review and registration processes).
    - **Issuance of the CERs**: This risk includes the verification risks, including possible clarifications regarding the methodology, monitoring and ability to properly verify the achieved ERs, and potential delays regarding the issuance of the CERs into purchasers' accounts. These risks may reduce the amount of CERs that are generated by the project.
    - **Crediting renewal risk:** This risk relates to the robustness of the project's baseline after the first period of generation of emission credits (crediting period, typically 7 years[3]) and the likelihood that the crediting period is renewed and, if so, the risk that future volumes of emission may decrease with future crediting periods. The applicable adjustment factor depends on the lengths of the contract beyond the first crediting period.

Over time and as additional deal data become available, the CFU may attempt to disaggregate these elements, as long as reliable info is available in the market. Given that the initial benchmark transaction is for the sale of CERs, the discount for a project selling VERs (or without a credible delivery of CERs), will be based on various risks of delivery and the time value of delay and/or replacement costs, taking into account possible liquidation ER values on voluntary markets. The discount range is proposed based on the above risk factors, on market surveys for VERs vs CER price ranges, and the Funds participant's willingness to pay.

Proposed regulatory risk discounts applicable to VER contracts: This risk is an issue primarily for transactions where a Carbon Fund is purchasing VERs (ie. it is assuming the risk that the project's VERs will not be fully convertible to CERs). Where there exists an appropriate, approved methodology, this risk is relatively low, compared to a technology where a methodology has not yet been approved. Lower values within the range of risk discount apply for projects using approved CDM methodologies, in Countries with established DNAs, and if there is a successful validation and registration history for projects under similar scenarios. Upper values within the range apply to sectors/projects where there is no/little CDM experience.

[3] Project sponsors may select crediting periods of 7 years, renewable twice (for a potential total period of 21 years), or a single, non-renewable period of 10 years. This crediting period is independent of the *commitment* period of the Kyoto Protocol, which is 2008-12. The value of emission reductions delivered after 2012, even if their *crediting* period has not expired, depends largely on whether there is a successor to the Kyoto Protocol.

Proposed regulatory risk discounts applicable to CER contracts: For CER contracts the risks still exists at lower levels, and they are related to the opportunity cost of Fund Participants (i.e. the reinvestment risk if projects in the portfolio deliver less CERs than initially expected and the Participants may have to pay higher prices for CERs in the future to replace the missed ones). The proposed discounts to be applied to the projects under this scenario shall remain at low levels, if applicable.

- **Purchase beyond 2012**: With the current regulatory period ending at 2012 – or the first commitment period of the Kyoto Protocol – there is little demand from buyers to purchase beyond 2012. Indeed, the Bank is among the very few buyers of emission reductions generated after 2012. Also, based on the lack of transparent information available on this item, the CFU does not discount prices beyond 2012, but instead, the CFU is limiting the amount purchased for that period up to acceptable risk exposure levels within the carbon finance portfolio.

- **Structured pricing**: features such as seniority (i.e., receiving the first tones delivered by a project), sweeping clauses (i.e., acquiring additional annual emission reductions to anticipate the full contract amount agreed upon), overcolateralization (i.e., acquiring less annual emission reductions than generated by the project), right of first refusal and other financial covenants increase the likelihood of delivery and a price increase is applied if the features described are agreed under the ERPA.

- **Additional price premia/discounts:** are assigned based on analysis of the current market as well as periodic surveys of the WB Carbon Fund Participants, reflecting their willingness to pay, and include the following:

  - **Additional community and/or environmental benefits** presented by the project and of buyer's interest. These adjustments are related to buyers' willingness to pay a higher price for the ERs generated in projects with higher social and/or environmental standards and benefits, or a lower price for projects with nil or even, negative community/environmental issues associated with its development. The price premium/discounts are assigned on a case by case basis, taking into account the projects inherent community benefits, the potential size of the projects and the cost of implementing a reasonable Community Benefits Plan.

  - **Market premium for technology, region, and country**: The market has higher willingness to pay for certain classes of projects. Projects certain to be eligible under the EU-ETS would also command a higher price. At the same time, buyers may request a price discount in order to commit themselves into a long-term CER contract for certain (not well-proven or risky) technologies and, or specific Countries. The premium/discount ranges are assigned based on the WB Carbon Fund participants' preferences or "willingness to pay".

Those premium are relatively small in order to avoid distortions and limit the overlapping in price ranges among different asset classes.

- **Other potential price adjustments**

  - **Up-front payments**: If part of the ERPA contract is paid in advance, the buyer is assuming project sponsors credit risk in case the project is not completed and does not deliver the emission reductions. The value of assuming such risk is a function of the riskiness of the project and any guarantees provided by the sponsor or other guarantor (as well as the creditworthiness of the guarantor). The price would be discounted to cover the risk of the project and/or guarantor not generating emission reductions enough to reimburse the up-front payment. The exact price discount will be defined by the CFU and calculated based on an appropriate risk-adjusted discount rate, the total amount advanced, and the proportion between the total amount of ERs purchased and the amount of ERs to be paid for upfront.

  - **Costs and expenses**: Under normal circumstances, the Bank carbon fund recovers preparation costs from carbon revenues. In contracts where the project sponsor wishes to accept a discount in return for not deducting the preparation cost, a deduction in price may be considered by the CFU based on contracted volume and the estimated preparation cost.

The prices resulting from this process are constantly checked against credible offers from competitors in order to ensure that the project sponsor receives the best price and that we do not lose competitive transactions on the basis of price. Also, the CFU obtains quotes and advice from relevant brokers at regular basis. Finally, the CFU reviews the price benchmarks and spreads periodically or if there is a major shift in the market (represented for example by a milestone deal or a major shift in demand).

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