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Financial Considerations for the GEF-7 Replenishment (Prepared by the GEF Trustee)

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Financial Considerations for the GEF-7 Replenishment

I. Introduction

1. The objective of this paper is to provide GEF-7 replenishment participants with additional information on the key financial considerations for the GEF-7 replenishment[1] and variables used in the GEF-7 financing scenarios. The paper comprises two parts, with Part 1 presenting updates on financial structures for GEF-7 replenishment resolution, and Part 2 presenting an update on foreign exchange (FX) exposure management and a socially responsible investment strategy.

2. Within Part 1, Section II presents indicative GEF-7 financing scenarios corresponding to the programming scenarios proposed by the GEF Secretariat[2] including an additional scenario, and reflecting estimates of funds to be carried over from the previous replenishments and investment income to be earned during the GEF-7 period. Greater detail on the financing components of the GEF-7 replenishment are included in Section III. Section IV presents an update on financial terms applicable to contributions to GEF-7, including the average exchange rates, indicative encashment schedules, and discount rate to be used to calculate credits and discounts on accelerated encashments. Within Part 2, Sections V and VI provide an update on the option of establishing a foreign exchange (FX) hedging mechanism and implementation of a socially responsible investment strategy respectively.

[1] For more information on GEF-7 Replenishment financial arrangements, refer to documents GEF/R.7/04/Rev.01: GEF-7 Replenishment: Overview of Financial Structure (Prepared by the Trustee) dated March 7th 2017 and GEF/R.7/07: GEF-7 Replenishment: Additional Information on Financial Structure (Prepared by the GEF Trustee) dated September 12th 2017.
[2] Refer to document GEF/R.7/09, GEF-7 Programming Scenarios and Global Environmental Benefits.

Financial Considerations for the GEF-7 Replenishment – Part 1: Financial Structure

II. Indicative Financing Scenarios

3. Three preliminary GEF-7 financing scenarios corresponding to the programming scenarios proposed by the GEF Secretariat[3] for the third GEF-7 replenishment meeting in Brasilia and one additional flat case scenario are shown in Table 1 below. The four scenarios include: (i) a "Programming Envelope of USD 4.4 bn" scenario in which the target programming level equals GEF-6 programming level of USD 4.4 billion; (ii) a "Programming Envelope of USD 5.0 bn" scenario representing an increase of 13% over the GEF-6 programming level[4] which % illustrates a possible financing structure under a stronger replenishment result; (iii) a "Programming Envelope of USD 4.1 bn" scenario which represents a 7.5% decrease over GEF-6 programming level, and further illustrates, all else equal as GEF-6, the revalued GEF-6 envelope based on the GEF-7 reference exchange rates; and (iv) "Flat Donor Contributions in National Currency as GEF-6" scenario in which GEF-6 contributions in local currency terms are revalued at GEF-7 reference exchange rates, resulting in a resource envelope of USD 3.71 billion.

4. The financing scenarios demonstrate how the programming scenarios can be achieved, based on assumptions with respect to funds to be carried over from GEF-6 and future potential investment income estimated to be earned during GEF-7 period.

Table 1. GEF-7 Preliminary Financing Scenarios

In USD millions		GEF-7 Scenarios							
	GEF-6	**"Programming Envelope of USD 4.4 bn"**	***Change from GEF-6***	**"Programming Envelope of USD 5.0 bn"**	***Change from GEF-6***	**"Programming Envelope of USD 4.1 bn"**	***Change from GEF-6***	**"Flat Donor Contributions in National Currency as GEF-6"**	***Change from GEF-6***
New Donor Resources	3,716	4,007	*7.8%*	4,574	*23.1%*	3,674	*-1.1%*	3,286	*-11.6%*
Projected Investment Income	134	150	*11.6%*	150	*11.6%*	150	*11.6%*	150	*11.6%*
Projected Carryover from Previous Replenishment	583	277	*-52.5%*	277	*-52.5%*	277	*-52.5%*	277	*-52.5%*
Total Replenishment Amount	**4,433**	**4,433**	***0.0%***	**5,000**	***12.8%***	**4,100**	***-7.5%***	**3,712**	***-16.3%***

III. Financing Components of the GEF-7 Replenishment

5. The expected resources for the GEF-7 replenishment comprises three components:

i. *New funding from donors.* Under the "Programming Envelope of USD 4.4 bn" scenario , donors would be required to contribute USD 4.0 billion, representing an increase of 7.8% from GEF-6 new donor funding in USD terms. Under the "Programming Envelope of USD 5.0 bn" scenario, new donor funding required would increase to USD 4.57 billion, representing an increase of 23.1% over GEF-6 new donor funding in USD terms. Under the "Programming Envelope of USD 4.1 bn" scenario, donors would be required to contribute USD 3.67 billion in new funding, representing a 1.1% decrease from GEF-6 new donor funding in USD terms. Similarly, under the "Flat Donor Contributions in National Currency as GEF-6" scenario, donors would be required to contribute USD 3.28 billion in new funding, which represents a 11.6% decrease from GEF-6 new donor funding in USD terms.

[3] Refer to document GEF/R.7/09, GEF-7 Programming Scenarios and Global Environmental Benefits

[4] GEF-6 programming and application of the STAR was based on the USD 4.43 billion agreed as the GEF-6 programming envelope.

ii. *Projected investment income.* Projected investment income for the GEF-7 replenishment period is USD 150 million. This assumes an average cash balance in the GEF Trust Fund (GEF TF) of approximately USD 3.48 billion and estimated rate of return of 1.08% per annum. Estimates are based on the GEF TF portfolio's average allocation to each of the Trust Fund Pool's (TF Pool) investment portfolios in which the GEF TF has invested. The total returns of the investment tranches are projected to remain modest, especially if fixed income yields continue to rise from recent historical lows. Annex 1 provides additional details on projected investment income calculations.

iii. *Funds carried over from previous replenishments.* The Trustee estimates that approximately USD 276.8 million will be carried over from previous replenishments into GEF-7. This funding comprises three components:

- *Unpaid resources.* Includes donor arrears and Instruments of Commitment (IoCs) that have not yet been deposited from GEF-6 and previous replenishments.
- *Deferred contributions*. Includes contributions paid by Contributing Participants, but restricted from being committed, per instructions from donors in accordance with the provisions of paragraph 8(c) of the GEF-6 Replenishment Resolution. As of September 30th 2017, there are no contributions that are deferred by Contributing Participants.
- *Paid-in but unallocated resources.* Includes any GEF-6 paid-in resources that remain unallocated at the end of the GEF-6 replenishment period. It is estimated that approximately USD 80 million will carry over into GEF-7.

A breakdown of the Trustee's estimate of the carry-over amount based on FX rates as of September 30th 2017 is shown in Table 2 below.

Table 2. Estimated GEF-7 Carryover Amount (in USD millions)

	Replenishment	USD eq. million a/
1. Unpaid Resources		**196.8**
a. Arrears		*136.7*
Egypt	GEF-1	0.8
United States	GEF-2	135
Nigeria	GEF-3	0.9
b. IoCs Not Yet Deposited with the Trustee		*54.8*
Nigeria	GEF-4	5.7
Greece	GEF-5	5.2
Nigeria	GEF-5	3.0
Pakistan	GEF-5	4.7
Portugal	GEF-5	5.2
Brazil	GEF-6	15.9
Russian Federation	GEF-6	15.0
c. Receivables in June 2019		*5.3*
Spain	GEF-6	5.3
2. Deferred Contributions		**0.0**
3. Estimated Paid-in but Unallocated GEF-6 Funding		**80.0**
Total Estimated GEF-7 Carryover (1 + 2 + 3)		**276.8**

a/ Valued on the basis of exchange rates as of September 30th 2017

IV. Financial Terms of GEF-6 Contributions and Payment Procedures

Currency of Denomination and Exchange Rates

6. While the operating currency of the GEF is the USD, the SDR is used in GEF replenishments as the base currency for burden sharing purposes and to provide a common denominator for expressing the overall size of the replenishment. Contributions are typically denominated in national currencies; however, donor countries with high inflation rates[5] must contribute in SDR or in USD.

7. Contributing Participants agreed that the six-month period from April 1 to September 30th 2017 would be used as the reference time period for translating the GEF-7 donor contributions between SDR values and national currency values. The final GEF-7 reference exchange rates, and a comparison between the GEF-7 and GEF-6 reference exchange rates are presented in Annexes 2 and 3 respectively.

Donor Instrument of Commitment (IoC)

8. Donor pledges to the four-year replenishment are formalized by the deposit of an IoC with the Trustee. An IoC constitutes a legally binding obligation on the part of the donor to pay the total amount specified to the GEF TF. There may be donors that are not able to provide legally binding IoCs for the entire replenishment period. Others may deposit a qualified IoC with the Trustee, agreeing to pay a part of their contribution without qualification while the remainder is still subject to enactment by their legislature of the necessary appropriation legislation. A donor depositing a qualified IoC undertakes to exercise its best efforts to obtain legislative approval for the full amount of its contribution by the same payment dates applicable to unqualified IoCs, as set out in a replenishment resolution.

Payment of Contributions

9. *Timing of Installments*: Donors are required to fulfill their financial commitments in four annual installments by November 30 of each year. Upon request from a donor, the Trustee may agree to earlier payment by a donor in writing and expedite the installment payment in fewer than the standard four installments. Alternatively, the Trustee may agree to a donor's request to postpone the payment of any installment, or a portion of the installment, up to, but not beyond, June 30 of the calendar year following the year in which the installment is due. Payments made pursuant to these agreements with the Trustee are deemed to be timely (i.e., not in arrears).

10. *Form of payment*: Payments for each subscription can be in cash or, at the option of the donor, by depositing in a security custodian account in the central bank of the donor, non-negotiable non-interest-bearing notes that are payable at their par value on demand (promissory note) or similar obligations, to be drawn down in cash (encashed) on demand by the GEF Trustee.

Payment by Promissory Notes and Notes Encashment

11. Promissory notes (PNs) are payable on demand and are normally encashed (or drawn down) on an approximately pro rata basis among donors. The Council approves the replenishment work program over the four-year replenishment period. Trustee commitments and disbursements for those same funding decisions occur over a more extended period as project activities are implemented. Accordingly, draw downs on PNs typically occur over the period set out in an indicative encashment schedule, which is attached to the replenishment resolution.

[5] Inflation as measured by the consumer price index (CPI) published on the International Monetary Fund's World Economic Outlook Database (October 2016). Countries are considered to have high inflation rates if their annual average inflation rate over the prior three years is greater than 10%. For more information, refer to paper entitled "*Reference Exchange Rates for Use in the Seventh GEF Replenishment*" (Prepared by the Trustee), GEF/R.7/03, March 7th 2017.

12. For GEF-7, the Trustee has calculated expected disbursement needs of the GEF Agencies by:

i. Using the observed historical disbursement patterns reported by GEF Agencies by project type (full sized projects, medium sized projects, enabling activities, etc.);

ii. Making assumptions with respect to expected amounts to be approved by project type; and

iii. Extrapolating the resulting disbursement needs based upon the expected amounts approved by project type and disbursement profile.

13. Additionally, the indicative encashment schedule takes into consideration donors' general preferences that encashment levels do not fluctuate sharply from period to period. The resulting GEF-7 indicative (or 'standard') encashment schedule is presented in Table 3 below.

Table 3. GEF-7 Indicative Encashment Schedule

Fiscal Year (July 1 to June 30)	GEF-7 Indicative Encashment Schedule (%)
2018	3.0%
2019	8.0%
2020	11.0%
2021	15.0%
2022	16.0%
2023	16.0%
2024	13.0%
2025	9.0%
2026	5.0%
2027	4.0%
Total	**100.0%**

14. Donors paying their installments with PNs, or similar obligations, can benefit from some flexibility in encashment arrangements. The Trustee may agree to encash PNs on a basis other than that of the indicative schedule provided the revised encashment schedule is no less favorable to the GEF TF than the indicative schedule. Additionally, at the written request of a donor experiencing exceptionally difficult budgetary circumstances, the Trustee may permit postponement of encashment for: i) up to two years for a donor that is also an eligible recipient under the GEF TF; and ii) up to 45 days for all other donors.

Payment by Cash

15. A donor paying their installments by cash may also take advantage of the flexibility if the present value of its cash installment payments to the GEF TF is at least the same as the present value generated under the indicative schedule discussed above.

Acceleration of Payments

16. Donors can accelerate either their cash installment payments or the encashment of their PNs. Donors can choose to use the acceleration in either of two ways:

i. *Reducing the actual payment amount in the currency of contribution or taking a "discount"*. In this case, the present value of the contribution is maintained through a combination of accelerating the payment schedule and reducing the actual cash payment amount. Under this option, there is no impact on the SDR value of the contribution.

ii. *Increasing the SDR value of the contribution while maintaining the actual payment amount in the currency of contribution, or taking a "credit"*. In this case, the present value of the contribution is increased by accelerating payment, and the burden-share can be increased or the donor can receive credit for a supplemental contribution. The option of selecting a credit enhances the SDR value of a contribution and can be applied to the donor's basic and or supplemental contribution.

17. The selection of a discount or credit (and corresponding increase in the basic or supplemental contribution amount) is generally made at the pledging session and reflected in the final contribution table attached to the replenishment resolution. The discount or credit selection is also expected to be confirmed at the time an IoC is deposited with the Trustee. If, for any reason, a donor was to change its discount or credit decision after replenishment negotiations are completed, its burden-share, and the SDR value of its contribution, would be affected retroactively. Illustrative alternative cash payment or encashment schedules can be found in Annex 4.

Discount Rate to be Used for GEF-7 Credits and Discounts Calculation

18. The amounts receivable by the GEF TF under the standard encashment schedule and an accelerated schedule should be identical in present value terms. This ensures that all donors will contribute to the GEF-7 at their agreed level. Based on the Trustee's analysis, the discount rate of 1.7% will be used for GEF-7 credits and discounts calculation. The discount rate is derived based on the expected investment return on the USD investment portfolio in which the GEF TF resources are to be invested over the ten-year standard encashment period for the GEF-7.

19. It is important to note that the actual amounts earned in the GEF TF investment portfolio may be higher or lower than amounts credited or discounted depending on the then prevailing market conditions and actual cash balances over the disbursement horizon of the replenishment.

Pro-rata Provision in the GEF TF

20. Over the four years of a GEF replenishment period, donors are expected to pay their contributions in four equal annual installments. Due to domestic constraints, some donors deposit a qualified IoC with the Trustee, which authorizes the full amount of the four-year contribution, pursuant to which a donor agrees to pay part of its contribution without qualification, while the remainder is still subject to enactment of the necessary legislative approvals.

21. To facilitate fair burden sharing between a "lead donor"[6] that provides a qualified IoC and other donors, and to protect the interests of other donors in the event of delayed or reduced contributions by the lead donor, the pro-rata (deferment) clause was introduced in the GEF-1. The pro-rata provision was also meant to provide an incentive to the lead donor to expedite necessary internal approvals of its GEF contribution. Timely provision of the donor's financing for the new replenishment would therefore "leverage" funding from the other replenishment donors who had invoked their pro-rata rights. However, where donors avail themselves of the pro-rata provision, the predictability of when resources will be made available to recipient countries is reduced along with the amount available for programming.

22. Replenishment discussions to date indicate that most donors agreed that the pro-rata provision had limited effect on the timely clearance of arrears and that it had not been widely used. On balance, donors appeared to support the removal of the pro-rata provision, however a domestic statutory reason for continuation of the provision has been identified by a donor, who has committed to reviewing this internally and providing updates in the course of the GEF-7 negotiations.

[6] A "lead donor" is a Contributing Participant that has deposited a qualified Instrument of Commitment and whose contribution represents more than 5% of the total amount of the resources to be contributed pursuant to the GEF-6.

V. Foreign Exchange Exposure Management

The GEF TF's Exposure to FX movement

23. The total USD funding from donors available for a replenishment of the GEF TF is exposed to FX exposure in two ways:

i. The total USD equivalent of a GEF Replenishment as calculated on the pledging date (the Target Replenishment Envelope) is calculated using a "reference rate", which is typically an average of the daily exchange rates of all pledging currencies versus the USD over a preceding six-month period. This means that the Target Replenishment Envelope is indicative only as it is based on an artificially constructed exchange rate and as such, cannot be replicated or matched. There is consequently "inbuilt" currency risk associated with the Target Replenishment Envelope.

ii. The GEF Replenishment donors typically make their contributions to the GEF TF over time, with the standard payment schedule spanning 10 years while donors can also accelerate their payments. This means that in the period between the pledging date and the contribution being received by the Trustee, during which exchange rates will move, there is FX risk.

Risks Stemming from the GEF TF's Exposure to Currency Risk

24. Since the value of the Target Replenishment Envelope in USD equivalent is artificial, any gain or loss relative to the Final Funding Envelope is informational as opposed to representing a real financial gain or loss. This is because any gain or loss does not expose the GEF TF or recipients to a potential gain or shortfall in funding after commitments have been made.

25. The GEF TF is exposed to actual financial risk given the role played by PNs in the GEF funding decision/commitment process. A large proportion of donors use PNs as part of their contribution mechanism. Typically, these PNs are drawn down (encashed) by the Bank per an agreed schedule, which can span10 years. The GEF makes funding decisions/commitments to recipients based on uncommitted amounts of (a) liquidity held in the GEF TF and (b) PNs that have been deposited by donors. Therefore, for the period after which donors have deposited PNs, funding decisions/commitments are made based on the USD equivalent value at the prevailing spot rate. When PNs are eventually encashed, the GEF TF realizes the gain or loss stemming from FX risk, given by the variation in donor's local currency exchange rate versus the USD when the commitment was made and when the encashment was made.

26. At present, the Trustee reports two primary financial figures relating to the effect of currency risk on the GEF TF. The first, is the level of funds available in the GEF TF to support GEF Council or CEO funding decisions. This number comprises any gains or losses that have occurred in past and current replenishments as well as the commitments/funding approvals associated with those replenishments. There is no separate tracking of any actual financial gains or losses relating to a specific replenishment. The second number reported is the change in the Funding Envelope relative to the Target Replenishment Envelope. This number essentially highlights the "opportunity cost" of not being able to match the Target Replenishment rate because of currency risk.

27. An appreciation of the USD relative to the donor contribution currencies, as has occurred throughout the GEF-6 period, affects the programming ability of the GEF and exposes recipients to the risk of the relative valuation of the USD against other contribution currencies. To put this risk into context, the GEF-6 Target Replenishment Envelope revalued at October 31st 2017 equates to USD 3.88 billion, which compared to the Target Replenishment Envelope of USD 4.43 billion, represents a decline of USD 0.56 billion, or 12.6%. This is what has been referred to as the "shortfall" throughout GEF-6.

28. *FX Reserve.* Recognizing the order of magnitude of the FX risks the GEF faces and to attempt to insulate the GEF's programming ability (and its recipients) from FX rate fluctuations, the Trustee has adopted the use of holding a defined USD reserve over the replenishment period to help protect against adverse FX movements without constraining the programming levels. The reserve level is reviewed for each replenishment and the actual level of the reserve confirmed at the completion of the replenishment

negotiations to consider changes in market conditions, programming level requirements, and the currency composition and amounts of the final donor pledges. The Trustee will adjust the reserve level (USD 150 million in GEF-6) as needed, on an annual basis throughout the replenishment period, and inform the GEF Council of any adjustments. While the holding of a defined FX reserve by the Trustee in previous replenishments has helped to act as a "buffer" against adverse exchange rate movements without constraining the programming levels, it is focused on limiting the negative impact of FX volatility on the programmed GEF's activities but does not directly address the FX volatility inherent in the GEF's funding structure. In other words, the FX reserve does not avoid occurrence of losses; it merely helps cover them.

Financial Considerations for the GEF-7 Replenishment – Part 2: FX Management and Investment Management

VI. Further Exploration of FX Exposure Management Options

29. To facilitate a more comprehensive FX risk management solution, the Trustee presented three additional measures to manage the FX risk at the second GEF-7 replenishment meeting in October 2017. These measures included three options: i) encouraging donors to contribute in USD; ii) employing a second operating currency; and iii) establishing an FX hedging program within an overarching risk management framework. Feedback received from GEF-7 Participants on these three options provided clear guidance for the Trustee, and has shaped the work undertaken within each of these options since the Addis Ababa meeting. An overview of the status of each option is provided below.

a. Encouraging Donors to make Pledges in USD

30. The simplest option to mitigate FX risk would be to encourage development partners to make their pledges in USD. As the holding, operating, contribution and commitment currencies would all be USD, FX risk within the GEF TF would be negated. It has been confirmed that this option would increase the complexity on the part of the donors, and would effectively be transferring the FX risk from the GEF TF to the donors as donor budgets are almost always denominated in national currencies. This option is therefore unattractive from the donor's perspective, and the majority of Participants are likely to pledge and contribute in their national currencies in GEF-7.

b. Second Operating Currency

31. A second operating currency has the potential to mitigate FX risk to the extent that the balance in each currency matches the anticipated disbursements in that currency. In GEF-6, 27% of donor pledges were denominated in EUR – a larger proportion that any other currency – making the EUR the most suitable candidate of all GEF contribution currencies.

32. Following the second GEF-7 replenishment meeting in October 2017, the Trustee worked with GEF agencies to determine their demand for EUR. In all cases, GEF agencies expressed little or no demand for EUR, with approximately 96% of cumulative funding allocations expected to be disbursed in USD[7]. As such, in the case of the GEF TF, the adoption of a second operating currency – whether it be the EUR or any other currency – is highly unlikely to be an effective tool to mitigate FX risk since the demand for a currency other than the USD is minimal.

33. In addition to this key point, there are several other important factors to consider in employing multiple operating currencies:

- The adoption of multiple operating currencies would involve a systemic change to the operation of the GEF TF as the Secretariat would need to manage project pipelines in both currencies, the Trustee would need to maintain two programming envelope applications and reports, and the GEF agencies would need to monitor and track project pipeline in multiple currencies. Most GEF agencies are not currently equipped to manage multiple operating currencies, and would require systems enhancements and changes to monitoring and reporting processes. For these reasons, administration costs for the Secretariat, Trustee and agencies would likely increase if we will monitor and track project pipeline in multiple currencies.
- Employing a second operating currency would involve splitting the GEFs resources into two or more investment portfolios denominated in each of the operating currencies. Extenuating market circumstances would therefore need to be considered for each currency, as they could have an

[7] Based on disbursements in GEF-6.

adverse impact on investment income. For example, investments in EUR in the current environment would likely incur negative investment income due to interest rates being below zero in the EUR market.

- A second operating currency would not address the FX risk arising from non-USD, non-EUR currencies. As such, even if there was sufficient demand for EUR by the GEF Agencies, only the EUR portion of FX risk (a maximum of 27% in GEF-6) could be mitigated through this approach.

34. Following careful consideration of these factors, the Trustee has determined that the lack of demand from GEF agencies, the potential for higher administrative costs, complexity of implementation, and expected negative impact on investment returns outweigh the potential benefit which a second operating currency could bring in terms of mitigating FX risk. For these reasons, the Trustee does not recommend this option to be explored any further.

c. Establishing a Hedging Program for the GEF TF

35. Further to requests from the GEF Council, the Trustee has continued to work toward establishing an FX hedging program within an overarching Risk Management Framework. It should be noted that while a hedging strategy may prove effective in insulating the GEF's funding from FX fluctuations, potential gains from currency movements would also be eliminated.

36. An FX Exposure Management Framework for the GEF would aim to minimize the effect of foreign exchange fluctuations on the Final Funding Envelope of a replenishment. It is not intended to attempt to match or be as close to the Target Replenishment Envelope as possible although this may come about as an indirect consequence of the hedging strategy undertaken.

37. The objective of the Framework would be to minimize the effect of FX fluctuations by hedging as much of the non-USD cashflows as practicable at the time of, or soon after, receipt of the donor Instruments of Commitment (IoCs) by the Trustee. The objective of hedging would be to "lock-in", at the time of hedging, the USD equivalent value of future cash instalments and PN encashments as agreed with donors, thereby providing a known level of USD funding envelope. To the extent that hedging may not include all donor IoCs, the Final Funding Envelope of a replenishment still depends on the USD equivalent values of cash payments/ PN encashment of non-hedged contributions. For the hedged contributions, GEF will not be exposed to USD volatility (strengthening or weakening). For the unhedged PN amounts, the GEF will still record losses or gains, depending on the USD exchange rate movement between programming date and encashment date.

38. The Trustee has undertaken a comprehensive review of hedging using the capital markets, including anticipated costs, possible collateral requirements and their impact on the GEF's programming ability, and the legal implications and challenges to gain capital market access. Among the options examined, the two approaches[8] that were explored in depth are detailed below.

Option 1: IDA Intermediation on Behalf of the GEF TF

39. With a triple-AAA credit rating, IDA could theoretically act as intermediary between the GEF TF and the market (that is, IDA could execute a hedging transaction with market counterparties and then enter into an offsetting transaction with the GEF TF); however, following further in-depth discussion within the World Bank, this option is not considered viable for the following reasons:

[8] Other options explored include: a) *IBRD intermediates on behalf of the GEF TF.* In the current environment, IBRD intermediation is unlikely due to IBRD having insufficient counterparty credit lines to support the addition of substantial FX derivatives exposures; and b) *GEF faces the capital markets as a standalone legal entity.* For the GEF to hedge its FX risk with market counterparties as a standalone entity, it would need to obtain the requisite legal status and credit market standing. which would not be plausible. This process would be lengthy, costly, and with no guarantee that the terms for market access received would make hedging possible.

- IDA is not currently authorized to intermediate for the GEF TF. While IDA is authorized to provide risk management products to its client countries and regional and international organizations, these are limited to disaster risk or financial products and do not include hedging services of the sort proposed. For IDA to gain authorization to provide such hedging services, consent would be required from IDA Deputies, and IDA's General Investment Authority[9] would need to be amended with necessary approvals by the World Bank Board of Executive Directors.
- IDA only gained its triple-A credit rating in June 2017, and will require some time to establish its counterparty lines as a new market issuer. The extent to which IDA has space to use these counterparty lines for hedging activity given its own risk management needs is therefore unclear.

Option 2: GEF Accesses the Capital Markets as part of IBRD's TF Pool.

40. This option involves hedging being done within the TF Pool using the World Bank's existing Trust Fund ISDA Master Agreements[10] signed with market counterparties to hedge currency risk. This approach has the advantage of leveraging the Bank's existing infrastructure, relationships and experience to help the GEF achieve its FX risk management objectives. A key benefit of using the TF pool approach is that the GEF could potentially benefit from the fact that there are other transactions with a counterparty, some of which may have a positive mark-to-market (MTM) that offsets the GEF's position, leading to reduced collateral requirements. A further benefit is that the pooled nature of the investments means that the burden of collateral payments does not generally fall on one single Trust Fund but that the pooled cash is used for any collateral requirements. Considering the associated costs, risks, risk mitigation measures, and implementation requirements, this approach to implement an FX hedging strategy is considered most appropriate for the GEF TF.

Key Components of an FX Hedging Program

41. Since the second GEF-7 replenishment meeting in October 2017, a significant amount of work has been undertaken toward pursuing a hedging program within an FX Exposure Management Framework. A successful FX Exposure Management Framework defines an FX policy, determines the governance framework, assesses risk positions, develops an FX hedging strategy, and evaluates and monitors the hedging strategy as well as the remaining exposures.

42. The following components would be included in the FX Exposure Management Framework:

- *The nature of receivables to be hedged.* A qualified IoC is an instrument provided by a donor committing to provide funds to the GEF, where the commitment is subject to enactment by the donor's legislature. Unqualified IoCs have no such restrictions. Qualified IoCs can only be hedged when and to the extent they become unqualified, meaning hedging is unlikely to take place at the time of initial Qualified IoC receipt. The main reason for hedging only unqualified IoC is to insulate GEF from any negative effects from delays due to the donor's legislative process. If such an event occurred, it may be possible that the GEF TF would incur a permanent financial loss. An analysis of GEF-6 replenishment shows that roughly 80% of the non-USD IoCs received from donors are unqualified at the time of receipt, meaning that hedging will still provide substantial risk coverage.

[9] General Investment Authority ("GIA") for IDA, Resolution No. 2017-0004, adopted on April 11th 2017 authorizes IDA to engage in FX transactions and the general use of derivatives; however, IDA can only do so for third-parties for investment funds administered by IDA. As IBRD is the GEF Trustee, IDA's GIA would need to be amended with approval from the Board.

[10] An ISDA (International Swaps and Derivatives Association) Master Agreement is a standardized agreement negotiated and signed between counterparties that sets out the legal and administrative terms that apply to all derivative transactions entered into between those parties. The ISDA Master Agreement is an industry-wide accepted agreement aimed at reducing credit risk between the parties mainly by payment- and close-out netting of the values mutually due by the parties. The ISDA Master Agreement, which includes a customized ISDA Schedule and a Credit Support Annex, is negotiated and entered into by IBRD on behalf of the Trust Funds not for individual Trust Funds, but for the TF Pool as a whole.

Some contribution currencies may not have sufficiently liquidity in the capital markets to make hedging practical or efficient for the GEF TF. Assessments of the viability of hedges for all the contribution currencies will be made by the Trustee following the final pledging session and hedging decisions will be made considering several factors such as overall market conditions, contribution volumes, associated costs for entering into transactions and liquidity of the currency in the market.

- *Financial instruments to be employed*. The hedging objectives should be achieved by employing a strategy with the highest efficiency given the prevailing market conditions. In the simplest form, this could mean employing a strategy of buying USD forward using FX Forward Over-The-Counter (OTC) derivative contracts with maturity dates equal to installment/encashment dates. Given the aim of providing a known level of programmable envelope for the GEF TF, the use of "rolling" or "laddered" strategies would not be appropriate as the final rate at which the installment/encashment would be converted to USD would only be known at the final rolling date. This compares to a "set and forget" strategy that puts all necessary hedges in place on at the time of hedging, and the conversion rate is therefore known as soon as the transaction is entered into.
- *Timing of hedging.* Hedges would be executed once unqualified IoCs are received. Typically, unqualified IoCs are received within a year of the start of a GEF replenishment period. The longer it takes to receive the unqualified IoCs, the longer it takes for the hedges to be put in place to stabilize the funding. Given that the Reference Exchange Rates are set ahead of the pledging session, it is necessary to explicitly recognize that there is no practical way to hedge the replenishment based on the Reference Exchange Rates. A proposed solution would be for the GEF to adopt a process, similar to that followed by IDA, whereby the replenishment envelope is re-set using FX rates on the date the hedging transactions are completed.
- *Collateral arrangement.* Almost any solution that involves the use of capital markets to hedge FX exposure with market counterparties would result in the need for collateral posting. When the mark-to-market (MtM) valuation of GEF hedges drops below the original value of the hedge, posting of collateral may be required. The size of the collateral will depend on the nature of the hedges undertaken (size, maturity etc.), the volatility of the currencies being hedged[11] and the terms of the ISDA Master Agreement.
- *Cash reserve*[12]. The cash reserve will continue to be held within the GEF for the following reasons: i) to cover the cost of unwinding hedging transactions or resulting from mitigating actions detailed above; ii) to preserve the programming ability of the GEF TF that may be negatively affected due to FX exchange rate fluctuations associated with contributions that are not hedged; and iii) for posting of collateral as and when needed. Any time the cash reserve is used, it will be replenished to ensure it remains at the agreed-upon level.
- *Risk Management.* An FX Risk Management Framework will clearly articulate the risks and the associated mitigation measures related to the FX hedging program. An FX Risk Management Framework for the GEF TF is currently being developed, with the key components described in Annex 5.

Should the GEF-7 Participants confirm that they wish the Trustee to continue pursuing an FX hedging program for the GEF, the FX Exposure Management Framework would be further developed and presented for the World Bank's internal approval before the fourth GEF-7 replenishment meeting, and presented to the GEF Council in June 2018 for approval.

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[11] Hedging done within the TF Pool may have lower collateral requirements as the hedging transactions will form part of a far larger set of financial transactions, some of which may be offsetting.

[12] The cash reserve can be invested across all MPs. The cash reserve is an amount of unprogrammed resources, which the Trustee maintains as a buffer against adverse FX movements.

43. **Cost of Implementing an FX Hedging Program** comprise two components:

- *Administration/transaction costs.* Annually, these costs are currently estimated to be in the range of 2 – 3 basis points of the outstanding exposure. An illustration of this cost is presented in Annex 7. As the hedging strategy develops, there may be additional costs for the development of new systems to manage, monitor and report on the hedging strategy, which would vary with the complexity of hedging instruments employed; and
- *External trading cost.* The external trading cost is a factor of market price of individual trades on a rolling basis. The cost of hedging is dependent on many factors, including – but not limited to – the final hedging structure and nature and size of instruments employed under the hedging framework.

44. **In summary**, to ensure any hedging strategy is implemented in the most efficient and cost effective manner, there are several factors that would require careful consideration from GEF-7 Participants:

- Firstly, it should be understood that the GEF TF would continue to be exposed to FX risk from the time the Reference Exchange Rates are set to the time the last unqualified IoC is deposited. That is, a hedging strategy will not be able to "lock-in" the Target Replenishment Level – rather, the final funding envelope will only be fully "locked-in" once the last unqualified IoC is deposited.
- Secondly, since qualified IoCs will be ineligible for inclusion in the hedging mechanism, these contributions will continue to be expose to FX risk until such time that they are unqualified. To allow a greater portion of the GEF TF to be hedged thereby ensuring the most efficient hedge possible, it would be preferable for the Trustee to receive unqualified IoCs.
- Thirdly, as the financial instruments purchased to implement the hedges will be aligned with the payment schedules of individual Participants, changes to payment schedules, including delays and instances of non-payment, may result in hedging transaction being unwound with the cost being borne by the GEF TF. Timely payment is therefore paramount to avoid unnecessary costs.

Next Steps

45. Should the GEF-7 replenishment Participants decide, at the third GEF-7 replenishment meeting in Brasilia, that the option of establishing an FX Hedging strategy should be pursued for possible implementation in GEF-7, the next steps would include the following:

- Finalization of the FX Risk Management Framework for the GEF TF;
- Complete the necessary processes to gain internal authorization, including from the World Bank's Board of Executive Directors (indicative timeline – March 2018); and
- Present the proposed hedging strategy under the FX Risk Management Framework for the GEF TF to the GEF Council for decision (June 2018).

VII. Implementation of a Socially Responsible Investment Strategy

46. The World Bank is committed to working with clients to implement responsible investment strategies and policies that align with its overarching fiduciary mandate. Accordingly, over the last twelve months, the WB's Treasury has been examining several aspects of Environmental, Social and Governance (ESG) Integration within the World Bank's investment process, with a focus on making sure any implementation is done in a sustainable, efficient and scalable way.

47. The WB's Treasury is in the process of harmonizing an approach across the World Bank Group, which would involve a responsible investment policy that:

- Formalizes existing and rigorous due diligence and risk management processes that take account of some ESG related factors, and expands on a more comprehensive and consistent consideration of these factors through ESG integration; and
- Meaningfully introduces ESG approaches to investment portfolio options in order to enhance alignment with clients' needs and institutional policies with regard to responsible investment of their funds.

48. This process has included consultation with industry experts, other MDBs and large asset managers with the aim of developing a coherent approach to ESG investing.

49. ESG integration has historically been primarily applied to the field of equity investing and its introduction into the fixed income space is still nascent and evolving. The World Bank is continuously monitoring ongoing developments in this area to see how the metrics available, despite being in their infancy, can be meaningfully and practically applied to the World Bank's investment portfolio. To that end, the World Bank recently announced a partnership with the Government Pension Investment Fund (GPIF), the world's largest pension fund, focused on developing a joint research program to explore practical solutions for integrating sustainability considerations into fixed income portfolios.

50. The Trustee is committed to working with the GEF Council and GEF-7 Participants to implement a responsible investing strategy that aligns with its overall mandate, and will provide an update on the progress at the third GEF-7 Replenishment Meeting in January 2018, and to the GEF Council in June 2018.

51. With respect to cost, all indicative costs are currently very high compared to the investment management fees for the TF Pool of 0.035%. Cost estimates range from 6 times, to as much to as 10 times, this cost. The World Bank Treasury are in discussion with various participants to see if a more appropriate approach can be found.

Annex 1. GEF-7 Investment Income Projections

GEF TF assets are invested across three of the World Bank Trust Fund’s investment model portfolios: “Model Portfolio 0” for short term working capital needs, “Model Portfolio 1” with an investment horizon of one year, and “Model Portfolio 2” with an investment horizon of three years. The latter two Model Portfolios aim to optimize investment returns subject to capital preservation with a high degree of confidence (based on statistical models) over the respective investment horizon. Approximately 90% of the GEF TF assets are invested in Model Portfolio 2 with the remaining balance split between Model Portfolios 0 and 1.

For the purposes of estimating investment income for the GEF-7 period, the GEF TF portfolio's average allocation across the TF Pool investment portfolios (i.e., 88% in Model Portfolio 2, 8% in Model Portfolio 1, and 4% in Model Portfolio 0) is assumed to remain constant over the GEF-7 replenishment period.

Table 4 below presents the projected balance and allocation between Model Portfolios, average projected rate of return by Model Portfolio and the total projected return over the GEF-7 period.

Table 4: GEF-7 Projected Investment Income

Projected Balance (USD million)	
Model Portfolio 0	143,204,793
Model Portfolio 1	279,744,365
Model Portfolio 2	3,052,966,196
Total	3,475,915,355
Projected rate of return (%)	
Model Portfolio 0	0.43%
Model Portfolio 1	0.65%
Model Portfolio 2	1.19%
Total	1.08%
Projected Investment Income (USD million)	
Model Portfolio 0	2,482,156
Model Portfolio 1	7,237,363
Model Portfolio 2	145,050,284
Total Projected GEF-7 Investment Income	**149,535,756**

Annex 2. Reference Exchange Rates for GEF-7

Reference Period: April 1st to September 30th 2017[13]

Currency	Currency Name	National Currency vs. SDR
AUD	Australian Dollar	1.80737
BRL	Brazilian Real	4.43774
CAD	Canadian Dollar	1.80731
CHF	Swiss Franc	1.35484
CNY	Chinese Yuan	9.41061
CZK	Czech Koruna	32.23651
DKK	Danish Krone	9.10696
EUR	Euro	1.22433
GBP	Pound Sterling	1.07562
INR	Indian Rupee	89.54699
JPY	Japanese Yen	154.4661
KRW	Korean Won	1574.33084
MXN	Mexican Peso	25.31147
NGN	Nigerian Naira	440.75676
NOK	Norwegian Krone	11.46186
NZD	New Zealand Dollar	1.93946
PKR	Pakistan Rupee	146.19781
RUB	Russian Ruble	80.82453
SEK	Swedish Krona	11.78234
TRY	Turkish Lira	4.93383
USD	United States Dollar	1.39114
XOF	West African CFA Franc	803.11014
ZAR	South African Rand	18.35501

[13] The time period for establishing the reference exchange rates for use in the GEF-7 replenishment was agreed by Contributing Participants following the March 2017 Replenishment Meeting in Paris.

Annex 3. Reference Exchange Rates for the GEF-7 and GEF-6 Comparison

		National Currency vs. SDR			National Currency vs. USD		
Currency	Currency Name	GEF-7 [a/]	GEF-6 [b/]	Change %	GEF-7 [a/]	GEF-6 [b/]	Change %
AUD	Australian Dollar	1.80737	1.58867	(13.77)	1.29970	1.05177	(23.57)
BRL	Brazilian Real	4.43774	3.29020	(34.88)	3.19028	2.17808	(46.47)
CAD	Canadian Dollar	1.80731	1.55758	(16.03)	1.29985	1.03132	(26.04)
CHF	Swiss Franc	1.35484	1.41547	4.28	0.97412	0.93733	(3.92)
CNY	Chinese Yuan	9.41061	9.27237	(1.49)	6.76641	6.13958	(10.21)
CZK	Czech Koruna	32.23651	29.66218	(8.68)	23.18971	19.64245	(18.06)
DKK	Danish Krone	9.10696	8.56248	(6.36)	6.55023	5.67001	(15.52)
EUR	Euro	1.22433	1.14829	(6.62)	0.88061	0.76039	(15.81)
GBP	Pound Sterling	1.07562	0.97877	(9.90)	0.77337	0.64814	(19.32)
INR	Indian Rupee	89.54699	89.09366	(0.51)	64.37148	58.97650	(9.15)
JPY	Japanese Yen	154.46610	149.26481	(3.48)	111.04120	98.83995	(12.34)
KRW	Korean Won	1574.33084	1685.32159	6.59	1131.70194	1115.97396	(1.41)
MXN	Mexican Peso	25.31147	19.17081	(32.03)	18.20058	12.69241	(43.40)
NGN	Nigerian Naira	440.75676	241.91518	(82.19)	316.79053	160.17357	(97.78)
NOK	Norwegian Krone	11.46186	8.92765	(28.39)	8.24379	5.91126	(39.46)
NZD	New Zealand Dollar	1.93946	1.86696	(3.88)	1.39454	1.23616	(12.81)
PKR	Pakistan Rupee	146.19781	152.07219	3.86	105.08899	100.67871	(4.38)
RUB	Russian Ruble	80.82453	48.69097	(65.99)	58.08987	32.23801	(80.19)
SEK	Swedish Krona	11.78234	9.90105	(19.00)	8.47509	6.55625	(29.27)
SDR	Special Drawing Rights	1.00000	1.00000	-	0.71900	0.66216	(8.58)
TRY	Turkish Lira	4.93383	2.87977	(71.33)	3.54744	1.90649	(86.07)
USD	United States Dollar	1.39114	1.51028	7.89	1.00000	1.00000	-
XOF	West African CFA Franc	803.11014	753.23042	(6.62)	577.64130	498.78440	(15.81)
ZAR	South African Rand	18.35501	14.71165	(24.77)	13.19560	9.73989	(35.48)

a/ As agreed by the Contributing Participants at the March 2017 GEF-7 replenishment meeting, the reference exchange rate to convert the SDR amount to the national currency will be the average daily exchange rate over the period from April 1, 2017 to September 30, 2017.

b/ As agreed by the Contributing Participants at the April 2013 GEF-6 replenishment meeting, the reference exchange rate to convert the SDR amount to the national currency will be the average daily exchange rate over the period from April 1, 2013 to September 30, 2013.

Annex 4. Illustrative Alternative Cash Payment or Encashment Schedules for GEF-7

(Percent of Total Contributions)

GEF-7 Financial Arrangements and Valuation of Donor Payments

Fiscal Year	GEF-7 Standard Schedule	Examples of Accelerated Schedules a/		
		Over 6 years	**Over 4 years**	**One payment**
2018	3.0	10.0	25.0	100.0
2019	8.0	16.0	25.0	
2020	11.0	20.0	25.0	
2021	15.0	24.0	25.0	
2022	16.0	20.0		
2023	16.0	10.0		
2024	13.0			
2025	9.0			
2026	5.0			
2027	4.0			
Face value of contribution	**100.0**	**100.0**	**100.0**	**100.0**
Discount rate (%) *b/*	1.7%	1.7%	1.7%	1.7%
NPV equivalent	91.6	94.3	96.0	98.4
			% of face value	
Discount *c/*		2.87%	4.58%	6.90%
Credit *d/*		2.95%	4.80%	7.42%

a/ The above schedules are provided for illustration purposes only.

b/ A discount rate of 1.7% is based on an estimate of the long-term USD-based return on investment. Actual returns will naturally depend on cash balances and market conditions over the replenishment period.

c/ If a donor chooses to use an accelerated cash payment or encashment schedule and take a discount, the discount amount may be deducted from the face value of the contribution to reduce the payment amount in national currency.

d/ If a donor chooses to use an accelerated cash payment or encashment schedule and take a credit, the credit amount may be added to the face value of the contribution to enhance the value of the SDR contribution.

Annex 5. Outline of the FX Risk Management Framework for the GEF TF

Overview

The GEF's FX Exposure Management Framework is intended to minimize the effect of foreign exchange fluctuations on the Final Funding Envelope of a replenishment. The GEF TF accessing the capital markets as part of the IBRD TF Pool confers many benefits. However, its commingled nature means financial or operational risks to other Pool participants may arise from the GEF's hedging activity and need to be adequately mitigated.

A key consideration related to using the TF Pool is the protection of the assets of other Trust Funds in the pool from financial risks arising due to FX hedging for the GEF TF. An FX Risk Management Framework will clearly articulate the risks and mitigation measures associated with the FX hedging program, to the GEF TF as well as to other trust funds in the TF Pool. Potential risks identified to date are:

i. Risk of non-payment by GEF donors that leads to the premature closing out of a derivative position, resulting in a loss;

ii. Risk of late-payment by GEF donors that leads to the closing out or rollover of a derivative position, resulting in a loss;

iii. Risk that a market counterparty defaults and the GEF's hedges result in other pool participants suffering a financial loss;

The above risks, (i) – (iii), would be adequately mitigated by the GEF TF acting as the financial backstop to compensate the commingled TF Pool for any financial losses arising because of the GEF's hedging. This would require monitoring of the GEF's liquid asset portfolio to ensure that should any of the above risks materialize, the assets would be sufficient to cover any financial losses to the pool. In a very unlikely event where assets in the GEF Trust Fund including the cash reserve are not sufficient to cover the loss, the Trustee may accelerate encashment of promissory notes pursuant to the Replenishment Resolution after careful coordination with the Contributing Participants. It is important to note that the remedial measures taken to address the financial impact of these risks would be permanent.

iv. Risk that the MTM of GEF's derivative positions triggers collateral calls on the overall Pool's cash position that results in a difficulty/inability of other trust funds to disburse;

v. Risk that the MTM of GEF's derivative positions results in a sufficiently large collateral call on the overall Pool's cash position that other Pool participants lose out on investment income;

The above risks, (iv) and (v) would be adequately mitigated by ongoing monitoring of the MTM of GEF's hedges and the ability to rebalance the GEF's investment portfolio as required to move cash into the overall trust fund cash pool (i.e. the ability to liquidate GEF's securities investments and place the proceeds into the cash pool). In a very unlikely event where assets in the GEF Trust Fund including the cash reserve are not sufficient hence rebalancing would not adequately provide funds needed under (iv) and (v), the Trustee may accelerate encashment of promissory notes pursuant to the Replenishment Resolution after careful coordination with the Contributing Participants. Remedial measures taken to address these risks should be temporary in nature, assuming donors meet the agreed payment schedules.

vi. Risk that the MTM of GEF's derivative positions becomes large relative to the size of the GEF's investment portfolio.

Should risk (vi) occur, specifically that (1) the negative MTM of GEF's derivative position becomes a significant proportion of GEF's investment portfolio; (2) collateral is required due to the negative MTM, there may be a risk that the GEF TF would not be able to make disbursements as required. In this case, the only mitigation measure would be to close out some of the derivative positions to lower the MTM of the GEF's hedges.

Annex 6. Hedging the GEF-6 Replenishment – A Simulation Exercise

I. Overview

This annex aims to synthesize the nature of GEF's exposure to FX risk and to show what the implementation of the proposed FX Exposure Management Framework would look like in practice[14], had it been executed for the GEF-6 replenishment.

The goal of hedging is to provide certainty about GEF's funding envelope based on selected[15] hedged IoCs at the time the IoCs are received (which is usually within a year of the start of the replenishment period). The effective USD value of GEF's resources will be "locked-in" at the date the IoCs are received, instead of being exposed to exchange rate fluctuations on the date the CIs are paid-in and PNs encashed (which can be up to 10 years after the start of the replenishment period).

It should be emphasized that hedging may result in an opportunity cost or gain for the GEF, in terms of the size of its effective resource envelope. The cost or gain is determined by the difference between the forward rate the resources are locked-in at and the spot rate at the time IoCs are cashed-in. For the Cash Installments (CIs) paid-in and PNs encashed until November 30, 2017, had the underlying IoCs been hedged on the date they were received, the GEF would have realized USD 973 million (locked-in amount at IoC date) instead of USD 882 million (effectively obtained by conversion at the spot rate available on the receipt dates). . The opportunity gain was determined mainly by USD strengthening and it might represent an opportunity cost anytime in the future, if USD weakens[16].

II. What are the FX risks affecting the GEF-6 programming envelope?

GEF's exposure to FX risk comes from the fact that most donors pay in their local currencies while the GEF's operating currency is the USD. For the GEF-6 replenishment, 76% of donor IoCs (for both CIs and PNs) were in currencies other than the USD. This meant that for a replenishment of USD equivalent 3.6 billion, over USD equivalent 2.7 billion was exposed to changes in donor currency FX rates against USD.

GEF 6 Replenishment	Amount in USD bln*	% of Total IoCs	% of non-USD IoCs
Non-USD PNs (1)	2.2	61%	80%
Non-USD CIs (2)	0.5	15%	20%
Total Non-USD IoCs (1+2)	2.7	76%	100%

*USD equivalent value computed using the replenishment reference rates

The GEF makes funding decisions/commitments based on uncommitted cash available in the GEF Trust Fund and PNs deposited. This gives rise to two different types of risk exposure for the GEFs resources depending on whether the resources are based on cash instalments or promissory notes.

[14] Where available, actual historical market data has been used and where necessary, simplifying assumptions and estimates were made to capture the impact of hedging over the replenishment period.
[15] Selected IoCs based on the criteria listed in the FX Exposure Management Framework.
[16] And/or the interest rate differential changes.

- Cash Installments: Funding decisions based on CIs is done only after the installments are received by the Trustee, meaning there is no "loss/gain" recorded on the GEF's balance sheet. However, from GEF-6 Program envelope point of view, there remains an inherent opportunity cost or gain because the rate at which those instalments are converted into USD upon receipt would be different from the GEF-6 reference exchange rates.
- Promissory Notes: While the GEF can commit against non-USD PNs at any time after the PNs have been deposited by donors, it exposes the GEF to financial risk associated with the PN revaluation during the time between deposit of the PN and subsequent encashment. Unlike in the case of cash installments, this financial risk could impact the GEF's funding ability as well as the GEF-6 Program envelope. The table below reflects the FX exposure on Cash installment received and PN encashed in USD million.

Valuation of GEF-6 Installments received between July 1, 2014 to Nov 30, 2017			
	GEF-6 Reference Exchange Rates	IoC receipt dates	Actual realized value
Cash Installments Received	494	441	415
Promissory Notes Encashed	550	506	467
Total	1044	947	882

Regardless of the type of IoC used by donors, GEF's effective resources in USD are given by the equivalent value of CIs and PNs at the spot FX rate on the date CIs are paid-in and PNs encashed.

What is the potential impact of the FX exposure on the GEF-6 resources?

For this simulation exercise, a risk measure called CVaR at the 97.5% confidence level is used. This risk metric represents the expected average loss had the worst 2.5% of loss cases occurred. In our analysis, accounting for the correlations between contribution currencies, CVaR can be interpreted as the loss or gain that would be expected if the USD changed against contribution currencies to levels that triggered the worst or best 2.5% outcomes.

For all donor payments received up to November 30th, 2017 the CVaR 97.5% (at July 1st, 2014) was USD 270 million. At the start of the GEF-6 replenishment period, given the USD 2.7 billion of non-USD exposure, the expected loss in the worst 2.5% of loss cases for all the CIs and PNs encashed up until November 30th was USD 270 million. For those same CIs and PNs, the actual realized reduction in value (compared to their value on July 1st 2014) was USD 175 million. This shows that CVaR is a conservative estimator of the potential changes in portfolio valuation. Had the USD dollar depreciated against the contribution currencies during this time span, the loss would have been a gain, resulting in more USD resources available for programming.

III. Analysis of the implementation of the FX Exposure Management Framework for GEF-6 replenishment

GEF's available resources after the implementation of the FX Exposure Management Framework for GEF-6 replenishment

As mentioned earlier, the hedging mechanism provides certainty of the amount of USD resources available for funding decision. **Had hedging transactions been transacted when the IoCs were received for the CIs and PNs cashed-in up to November 30th, 2017, the total resources available for programming would have been USD 459 million from CIs and USD 514 million from PNs, USD 90 million more than**

the actual realized amounts of USD 882 million recorded by GEF in its balance sheet by conversion at the spot rate at the time funds in donors' contribution currencies were received. Even though in this case there is an FX gain from locking-in forward rates, this is not the rule. The gain was due to the appreciation of the USD and a loss could have been obtain had the dollar weakened.

Nature of receivables hedged

As per the FX Exposure Management Framework, the hedging only applies to unqualified IoCs and furthermore, to currencies with liquid FX forward markets. By applying those conditions to the GEF-6 replenishment, only the flows corresponding to the unqualified IoCs denominated in EUR, JPY, GBP, SEK, CHF, AUD are part of the hedging simulation. This means that an amount of USD equivalent 2.1 billion (representing 77% of the non-USD contributions and 58% of the total GEF-6 replenishment), was hedged in the simulation.

What is the effect of hedging these IoCs?

The FX Exposure Management Framework proposed hedging eligible IoCs on or soon after receipt of the IoC by the Trustee. For simplification, we have assumed for this exercise that hedging takes place at the end of the quarter the IoCs are received.

To understand the impact of hedging on GEF's FX exposure, we computed the 97.5% CVaR of all GEF's resources before hedging, meaning on August 27th 2015 (the date the last IoC was received and the last hedge was put in place). The average loss expected in the worst 2.5% of loss cases for non-USD IoCs is USD 691 million, compared with USD 93 million - the average loss expected for the IoCs that remained unhedged. For the hedged resources, the exposure to FX risk will be captured by the daily mark-to-market (MTM) of the forward portfolio, that will translate in an effective loss or gain only if the hedges are prematurely terminated. For the unhedged resources, the exposure to FX risk triggers effective losses or gains versus the USD equivalent value computed using August 27th 2015 FX rates.

Most of the residual FX risk emanates from qualified EUR pledges. There is scope for further risk reduction if the uncertainties associated with qualified IoCs were potentially offset by the availability of greater EUR resources.

What could make hedging more effective?

The longer the time span until the IoCs are received, the higher the uncertainly regarding the USD amount ultimately available for programming. If the IoCs selected for the simulation had been hedged on one specific date, for example July 1st 2014, instead of at the time the IoCs had been received, GEF's available resources would have been USD 182 million higher (meaning the value of hedged IoC if hedged on July 1st 2014 forward rates were USD 2.2 billion compared with USD 2.1 billion if hedged on the date the IoCs were received). Depending on the market conditions, the changes in FX rate could translate into higher or lower available resources for GEF and ceteris paribus, the longer it takes for IoCs to be received, the greater the potential volatility of available resources.

Hedging trade simulation

For each of the selected currencies and each encashment date, a forward contract is concluded on or after the date the IoC is received, by selling the contribution currency and buying USD. The maturity of the

contract is given by the day the money is scheduled to be cashed-in. As a simplifying hypothesis, all contributions scheduled to be received during a quarter were considered to be received at the end of the quarter and therefore, the maturity of the forward contracts set at the end of the quarter.

Under the hedging strategy, 298 transactions were concluded, with an average size of USD 7 million and an average maturity of 4.4 years:

Hedged currencies	Forward weighted average maturity	Number of trades	Average Trade Size (million USD equiv.)	% of hedged amount
AUD	5.2	35	2	4%
EUR	3.6	130	5	37%
JPY	4.9	37	14	27%
SEK	5.1	25	7	9%
CHF	3.7	34	4	6%
GBP	4.9	37	9	17%
Average/Total	4.4	298	7	100.00%

The difference between the spot and forward rates quoted for different maturities at a certain date is given by the difference between the USD interest rate and the contribution currency interest rate, taken over the maturity of the forward. Therefore, for those currencies having an interest rate lower than the USD interest rate for a given maturity, buying USD forward will be cheaper than buying USD spot and vice versa. All the currencies in the simulation except for AUD have interest rates lower than USD.

	Value at FX rate on IoC date	Locked-in Value at Forward Rate
Hedged IoCs (billion USD)	1.924	2.054

Implications of hedging – MTM and Collateral

Once the forward transactions are concluded, GEF's exposure to changes in FX rates, arising from the hedged IoCs, will be reflected daily in the MTM of the forward portfolio. The MTM is negative if the USD is weakening in forward terms for the corresponding remaining maturities and positive when the USD is strengthening[17].

Given the USD strengthening since the date the IoCs were received, and the fact that most of currencies hedged have interest rates lower than the USD, the MTM has been positive for the simulation period, with

[17] The weakening of the USD in forward terms could be triggered by USD weakening in the spot market and/or an increase in the USD interest rate or/and a decrease in the hedged currency interest rate. Ceteris paribus, the passing of time only will have a negative impact on the MTM for the currencies with interest rates higher than the USD interest rate and positive impact for currencies with interest rates lower than USD interest rate.

a maximum of USD 230 million. If the conditions were different, for example USD had weakened, the MTM would have been negative.

If the MTM is negative, in line with the ISDAs in place for the Trust Fund Investment Pool, the pool may need to deposit cash collateral with the counterparty, potentially with a value up to the MTM amount depending on the specifics of the ISDA with the counterparty. For example, for a negative MTM of USD 230 million, an amount of up to USD 230 million may need to be deposited with the counterparties. GEF participation in the Trust Fund Investment Pool means it could potentially benefit from the fact that there are other transactions with a counterparty, some of which may have a positive MTM that offsets the GEF's position, leading to reduced collateral requirements. A further benefit is that the pooled nature of the investments means that the burden of collateral payments does not generally fall on one single Trust Fund but that the pooled cash is used for any collateral requirements. If the collateral calls triggered by the negative MTM of GEF's derivative portfolio constrain the other funds liquidity, in the worst-case scenario, the GEF would need to hold, in cash and in excess of any amounts required for disbursement, an amount up to USD 230 million.

If the forwards transactions are not wound up in the market before maturity, the negative MTM affects GEF only from a liquidity standpoint. The MTM could translate into an effective loss or gain for GEF if the forward transactions are prematurely closed in the market, because of reasons pertaining to GEF or because of counterparty default. For example, if today the MTM for selling forward AUD 1 million against the USD, with maturity date end of 2020, is negative USD 0.2 million and the forward is wound up in the market, the GEF will experience a loss of USD 0.2 million and will be exposed to the AUD/USD spot rate until the end of 2020.

The average negative MTM which can be expected in the worst 2.5% of cases for the hedged portfolio is USD 734 million. This amount was calculated taking in account the average maturity of forward contracts, concluded at the date the IoCs were received, between July 1st,2014 and August 27th, 2015. Using the FX volatility from the financial crisis period, the simulation shows an even more pronounced average negative MTM of USD 1.1 billion. Even though the estimations are for extreme cases, they are indicative of the MTM that could be experienced by GEF.

Annex 7: Estimating the Administrative Costs of Hedging

In Paragraph 43, an estimate of the administrative costs of hedging was presented. To put these figures into context, the table below shows the costs of implementing the FX Exposure Management Framework for GEF-6 as detailed in the preceding Annex. Specifically, it shows what the nominal outstanding exposure would have been at each quarterly period of the GEF-6 period given the hedged portfolio and the scheduled payment dates. For simplification, costs are then averaged over a fiscal year period and the administrative cost of 2-3 basis points applied to this average outstanding nominal exposure. The analysis shows that the hedging would cost between USD 1.9 million and USD 2.9 million over the course of a 10 year replenishment payment period.

Period	Nominal Exposure Remaining	Average per FY	Annual Fees Billed at 2bp	Annual Fees Billed at 3bp
FY15Q2	$2,069,334,166			
FY15Q3	$1,944,891,446			
FY15Q4	$1,903,565,359	$1,972,596,991	$394,519	$591,779
FY16Q1	$1,874,189,365			
FY16Q2	$1,816,716,328			
FY16Q3	$1,783,212,867			
FY16Q4	$1,749,045,404	$1,805,790,991	$361,158	$541,737
FY17Q1	$1,708,112,968			
FY17Q2	$1,617,973,005			
FY17Q3	$1,568,710,741			
FY17Q4	$1,520,414,335	$1,603,802,762	$320,761	$481,141
FY18Q1	$1,465,037,110			
FY18Q2	$1,383,482,501			
FY18Q3	$1,307,317,704			
FY18Q4	$1,247,253,959	$1,350,772,819	$270,155	$405,232
FY19Q1	$1,183,691,037			
FY19Q2	$1,120,128,114			
FY19Q3	$1,044,104,597			
FY19Q4	$981,909,851	$1,082,458,400	$216,492	$324,738
FY20Q1	$912,052,746			
FY20Q2	$842,195,642			
FY20Q3	$768,971,564			
FY20Q4	$698,366,147	$805,396,525	$161,079	$241,619
FY21Q1	$632,889,730			
FY21Q2	$554,704,829			
FY21Q3	$491,870,199			
FY21Q4	$423,648,246	$525,778,251	$105,156	$157,733
FY22Q1	$373,484,246			
FY22Q2	$323,320,247			
FY22Q3	$275,340,220			
FY22Q4	$226,444,524	$299,647,310	$59,929	$89,894
FY23Q1	$186,911,584			
FY23Q2	$145,536,891			
FY23Q3	$111,558,684			
FY23Q4	$77,037,203	$130,261,091	$26,052	$39,078
FY24Q1	$57,916,946			
FY24Q2	$38,796,689			
FY24Q3	$19,549,254			
FY24Q4	$0	$29,065,722	$5,813	$8,720
		Total Fees for Replenishment	**$1,921,114**	**$2,881,671**