



Guidance on the Preparation of Financing Plan Emission Reduction Programs

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This note takes into consideration the guidance of World Bank's Internal Guidance Notes on Economic Analysis of the Investment Project Financing (2013); Social Value of Carbon in Project Appraisal (2014); and Discounting Costs and Benefits in Economic Analysis of World Bank Projects (2016).

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Abbreviations

BioCF	BioCarbon Fund
CAFI	Central African Forest Initiative
DFID	Department for International Development, Government of UK
ERR	Economic Rate of Return
ER	Emission Reduction
ERPA	Emission Reduction Payment Agreement
ESMF	Environmental and Social Management Framework
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Program
FREL/FRL	Forest Reference Emissions Level/Forest Reference Level
GIZ	Gesellschaft für Internationale Zusammenarbeit (German International Cooperation)
IRR	Internal Rate of Return
ISFL	Integrated Sustainable Forest Landscapes
MRV	Monitoring, Reporting and Verification
NPV	Net Present Value
OP/BP	Operational Policy/Business Policy
PAD	Project Appraisal Document
PCN	Project Concept Note
PDO	Program Development Objective
PFES	Payment for Forest Environmental Services
PSA	Pago por Servicios Ambientales
SESA	Strategic Environmental and Social Assessment
SORT	Systematic Operations Risk-rating Tool (SORT)
USAID	United States Agency for International Development

Executive Summary

A financing plan is an integral part of the Emission Reduction (ER) Programs proposed for implementation under the Forest Carbon Partnership Facility (FCPF) and BioCarbon Fund Initiative for Sustainable Forest Landscapes (BioCF ISFL). Financing plans form the basis for implementation of ER programs. Consistent and systematic presentation of data, information and assumptions in the financing plan can provide an overview of ER programs in a transparent manner.

The guidance presented in this note for the preparation of financing plans for ER programs seeks to achieve two objectives - ensure preparation of a sound financing plan to support implementation of ER programs proposed under the FCPF and BioCF ISFL; and to facilitate review of the financing plan as part of ER program appraisal.

First, this note presents step-wise guidance on preparation of a financing plan with a focus on the organization of data on costs, revenues, and sources of financing; measures to address any funding gaps; process for conducting financial and economic analysis and sensitivity analysis of variables influencing program finance; and arrangements for flow of funds to ensure that the financing plan is robust in supporting ER program implementation.

Second, this note provides guidance for reviewing financing plans as part of the World Bank's appraisal. The data and information presented in financing plans is expected to be reviewed by the World Bank economist(s) of a country or region in which an ER program will be implemented. The guidance presented in this note is expected to facilitate country or regional economists and tasks teams in the review of ER programs to ensure that data and information presented in financing plans are consistent with information presented in support of program development objectives (PDO). The feedback from this review will inform updates to financial plans, identification of performance indicators to assess ER program performance and assessments of financial risks to ER programs.

This note is expected to be revised from time to time based on feedback from program and review teams.

Guidance on the Preparation of Financing Plan Emission Reduction Programs

1. Introduction

The financing plan is a key component of ER programs proposed for implementation under the FCPF and the BioCF ISFL trust funds and review of financing plans is an element of the World Bank's appraisal of Emission Reduction programs.

This note presents guidance on data and information relevant for preparation of a financing plan to be presented in the FCPF and BioCF ISFL ER Program Documents (ER PDs)¹; as well as in Program Appraisal Document (PAD) sections on program financing and financial and economic analysis for FCPF and BioCF ISFL ER programs.

Preparation of a comprehensive financing plan assumes transparent estimation of costs and revenues of ER program activities, determination of financing needs, identification of financing sources and institutional arrangements for flow of funds to ER programs. Financing plans are significant for ER programs in the following contexts:

- They support credible program design by outlining sources of finance
- They present financing information to reflect the feasibility of achieving the program's overall objectives (also called the program development objective or PDO)

The financing plans prepared in support of ER program implementation are expected to be reviewed by the World Bank country economists as part of program appraisal. The task teams for FCPF and BioCF ISFL ER programs are expected to coordinate the review of financial plans as part of program appraisal. This note considers the aspects of World Bank guidance on economic analysis of projects implemented under the Bank's investment project financing relevant to appraisal of ER programs².

1.1 Objectives of the guidance note

The objectives of this note are:

- To provide guidance on preparation of financing plan of ER programs implemented under FCPF and BioCF ISFL; and
- To present information relevant for review of financing plan as part of program appraisal.

Financing plans for ER programs are expected to be prepared following capital budgeting procedures and considering data and information on costs and benefits of ER program activities; sources of financing; analysis of financial surplus or gap; and the options to address financing gap, if any, in implementing an ER program. Guidance presented in this note can assist program teams in transparent presentation of financing information on ER programs as well as in the review of programs.

¹ Section 6.2 of the FCPF ERPD and Section 3.1.3 of the BioCF ISFL PD.

In the case of FCPF Carbon Fund, financing plan is not a criterion of the FCPF Carbon Fund Methodological Framework and is therefore not subject to review by the Technical Advisory Panel.

² World Bank (2013) Investment Project Financing Economic Analysis Guidance Note, The World Bank.

1.2 Considerations in the preparation of financing plan of ER programs

The type of information required for a financing plan depends on the program's objectives, land use categories covered under a program, and categories of public and private costs and benefits of an ER program.

1.2.1 Program objective

Reducing GHG emissions and enhancing GHG removals through sinks are key objectives for most land use mitigation programs. For programs focused solely on these objectives, the nature and scope of financial and economic analysis is expected to be limited to the achievement of reducing net emissions.

However, for programs that include additional objectives such as improvement of incomes, livelihoods of communities, and ecosystem services, the nature and scope of financial and economic analysis must reflect these multiple objectives. For example, economic analysis of income and employment can clarify the contribution of a program to the reduction of poverty and inequality, whereas economic analysis of improved ecosystem services can highlight the economic value of ecosystem services such as soil conservation and erosion control to enhancing agricultural productivity.

1.2.2 Land use activities covered in a program

The number and type of land use activities included in a program can influence the preparation of its financing plan. In programs focused solely on REDD+ under the FCPF Carbon Fund, the financing plan is expected to focus on the costs and benefits of activities addressing the drivers of deforestation and forest degradation and enhancement of removals.

Programs focused on multiple land uses to promote sustainable landscape management under the BioCF ISFL are expected to fund a wide range of activities associated with multiple land use categories targeting emissions and removals within agriculture, forests, grassland systems etc. In this case, the financing plan is expected to consider activities associated with these various land uses. If different land use activities are included in a landscape program at different intervals of program implementation, financing plan of the landscape program needs to be revised to reflect the costs and revenues of all land use activities included in a program.

2. Components of the financing plan

Components that are integral to an ER program's financing plan are discussed in the following sections:

1. Organization of data and information on land use
2. Estimation of costs and benefits of program activities
3. Sources and categories of financing
4. Analysis of financing surplus or gap
5. Options for addressing financing gap
6. Arrangements for flow of funds
7. Financial and economic analysis
8. Sensitivity analysis of factors influencing financing plan

The terms of reference for preparing a financing plan (**Annex 1**), an outline of items to be covered in a financing plan (**Annex 2**), and a template for the summary of a financing plan (**Annex 3**) are included as Annexes to this note to facilitate the preparation of financing plan.

2.1 Data on land use and land use change

The land use and land use change assessment provides activity data on forest land use for a reference period and data on forest carbon stocks and changes collected through forest inventory enables estimation of emissions factors. The activity data and emission factor data of a reference period as well as data on activities proposed for implementation in an ER program facilitate the estimation of GHG emissions and removals during reference and program periods and form inputs to a financing plan.

2.2 Estimation of costs and benefits of ER program activities

Data on proposed program activities and their unit costs and benefits/revenues are used to estimate the costs and revenue streams of a program.

2.2.1 Program costs

ER program costs can be grouped into four categories – institutional costs, implementation costs, transaction costs and opportunity costs. The first three categories of costs form part of the total ER program costs and are discussed below. Although opportunity costs do not form part of program implementation costs, their assessment reflects the foregone revenues/benefits of implementing an ER program and can be relevant for benefit sharing mechanisms. Therefore, opportunity costs are discussed further in the section on ER program revenues/benefits.

The complex causal chains associated with land use activities may require several assumptions to quantify costs, especially in relation to institutional costs and implementation costs. In such cases, it is useful to outline anticipated costs and their occurrence during program implementation.

2.2.1.1 Institutional costs

These include costs associated with program management, coordination, administration, training, capacity building, organization of stakeholder consultations and grievance redress mechanisms, strategic environmental and social assessments (SESAs), implementation of an environmental and social management framework (ESMF) and benefit sharing mechanisms, and other costs of ER programs that are not covered under implementation costs and transaction costs.

2.2.1.2 Implementation costs

Implementation costs are incurred in implementing specific ER program activities – e.g. activities to address drivers of deforestation and degradation (sustainable timber production, agriculture and livestock management, efficient biomass-based cook stoves etc.) and activities for enhancement of carbon stocks (afforestation and reforestation, enhancement of removals, and reduction in displacement of emissions to areas outside of a program). Implementation costs can include both fixed and variable costs and depend

on types of program activities, scale and extent of program coverage (e.g. sub-national vs. national), and unit costs of implementation.

2.2.1.3 Transaction costs

These include costs incurred for the measurement of emission reductions, their monitoring, reporting and verification, meeting requirements for results-based payment contracts, and the transfer of emission reductions between contracting entities. Such costs can include those related to the establishment of forest reference emissions levels and forest reference levels (FREL/FRL); monitoring, reporting and verification (MRV) of ER program activities; management of registry operations; and legal and other costs associated with design and execution of performance contracts; and the costs to transfer emission reductions among program participants.

2.2.2 ER program revenue and benefit streams

In addition to revenue from results-based payments for emission reductions, ER programs can have multiple revenue streams from products (e.g. timber and non-timber products) and services (e.g. ecotourism) that are valued at market prices. Other benefits that are not amenable for valuation using market prices (e.g. ecosystem services provided by biodiversity, soil, and water conservation) can be valued using imputed values.

2.2.2.1 Opportunity costs in relation to ER program benefits

Opportunity cost refers to the present value (NPV) of benefits (such as timber, agriculture products, livestock or other land use activities) from land use activities in the absence of an ER program. Opportunity costs represent the value foregone from not continuing with the land use (e.g. timber production, converting forest land to agricultural land, livestock grazing etc.) practiced in the reference period.³

Opportunity costs are not part of the implementing costs of an ER program, however, they can be relevant to the design of benefit sharing mechanisms to ensure effective participation and contribution of stakeholders in addressing the drivers of land use change.

2.2.3 Tools for estimation of costs and revenues

The costs and revenues associated with an ER program need to be estimated as part of the preparation of the financing plan. The FCPF REDD+ Cost Elements Assessment Tool⁴ an excel spreadsheet template designed to quantify costs (institutional, implementation, transactional, and opportunity costs) and

³ World Bank (2011): Estimation of Opportunity Costs of REDD+, Version 1.3, presents details.

<https://www.forestcarbonpartnership.org/system/files/documents/OppCostsREDD%2Bv1.3-2011.03.11.pdf>

⁴ Estimation of REDD+ Cost Elements Assessment Tool and accompanying User Manual (World Bank 2016) facilitate quantification of costs and benefits of an ER program. The Facility Management Team of the FCPF and the Fund Management Team of the BioCF ISFL can provide guidance on application of Cost Elements Assessment Tool. The link to the Tool and User Manual are noted below.

<https://www.forestcarbonpartnership.org/system/files/documents/Manual%20REDD%2B%20cost%20element%20assessment%20tool%20final1.pdf>

revenues of ER programs can be used. Other similar tools that facilitate quantification of costs and benefits of ER programs can be used.

2.3 Sources of ER program financing

Data and information on sources of financing need to be collected to estimate the financing available to implement the activities proposed in an ER program.

The financing for an ER program can be from many sources, including government budget, multilateral and bilateral and private sector sources. Funds from national budgets reflect the commitment of provincial and national governments to support ER program implementation. Grants may not require repayment of funds used for implementing an ER program, whereas loans need to be repaid as per the terms of the loan agreements. Equity refers to contribution of capital from public or private agencies to invest in an ER program. The return on equity to investing agencies can be from revenues from ER program products (e.g. timber, non-timber, and agricultural products) and services (revenue from emission reductions, ecotourism etc.).

Documentation on sources of financing needs to be collected and verified from agencies identified to fund an ER program. The sources of financing that can be verified based on supporting documentation should be categorized as secured financing. The sources of financing that are anticipated during program period but cannot be verified at the beginning of an ER program should be considered unsecured financing, and upon checking for certainty can be categorized as secured. The unsecured financing that is unlikely to flow during the 2-3 years from the start of an ER program or until the conduct of first verification of the emission reductions in a program should be considered as a potential financing source and should be reflected in the sensitivity analysis.

2.3.1 Domestic sources

Domestic sources of financing can include government budget, resources from other public and private agencies in a country and revenue streams from an ER program that can be used as a financing source for program implementation.

Government: Data and information on all forms of government financing to an ER program need to be quantified along with details on financing (e.g. taxes, subsidies, royalties etc.) from provincial and national governments to an ER program.

Other public agencies: Grants, loans and equity from public and quasi-public agencies that are not part of provincial and national government budget need to be identified and estimated based on information collected from relevant agencies.

Private: Private sources can be in the form of grants, loans and equity from non-commercial and commercial entities. The data and information on private financial flows need to be collected from agencies associated with financing of an ER program.

Revenue from ER program: For revenue streams of an ER program to be categorized as a financing source, it should be used as a source of finance for ER program implementation. For revenue streams that are public, there needs to be documentation on the potential use of program revenue streams as a future financing source for ER program implementation.

2.3.2 International sources

International sources of finance for ER programs can be from bilateral, multilateral and private sources. Bilateral and multilateral sources are major international financing sources, while private finance forms a small proportion and is often associated with the commercial forestry and agricultural products.

Bilateral: A major category of bilateral financing is in the form of grants. Generally, most grant financing is from bilateral development agencies (e.g. GIZ, USAID, DFID, Norway, etc.) and financing institutions (e.g. KfW), which need to be collected from agencies supporting an ER program. In collecting information on bilateral financing, a direct and explicit link to the ER program's objective and overall implementation must be made clear to avoid attribution of generic bilateral agency support as financing to an ER program.

Multilateral: Financing from multilateral development agencies such as the World Bank and other development banks can be in the form of grants and loans. In the World Bank financing, IDA funds are in the form of grants and loans, while IBRD funds are in the form of loans. In relation to World Bank trust funds, FCPF Readiness fund and BioCF ISFL upfront funding are in the form of grants; finance from the Forest Investment Program (FIP) is in the form of grants and loans; and FCPF Carbon Fund and BioCF Tranche Three funding is in the form of results-based finance. Other sources of multilateral finance can include financing from regional development banks, Global Environment Facility, Green Climate Fund, Central African Forest Initiative, and others.

Private: International private finance to ER programs can be in the form of grants, loans and equity. Possible sources of private finance include investment funds, productive alliances and commodity companies, trade associations, foundations, and non-governmental organizations. The information on private finance is not often published and therefore needs to be collected from relevant agencies.

2.4 Assessment of financing surplus or gap

The comparison of costs and revenue streams provides data to assess a surplus or gap in the financing needed to adequately implement ER programs. The short fall of the total available financing sources to meet the total identified program costs (sum of institutional, implementation and transaction costs) is considered a financing gap that needs to be bridged to ensure effective program implementation.

A large financing gap can be a major risk to ER program implementation. It is useful to estimate the financing gap considering information from a sensitivity analysis of costs and revenues during program implementation. A systematic assessment on program costs and financing sources at the start of a program and annually during program implementation is relevant for active management of financing risks to an ER program.

2.5 Options for addressing financing gap

The options to address the financing gap of an ER program can be traditional sources such as grants, loans and equity; and/or alternative sources that have not been widely used in forestry context but can be relevant as potential sources of financing to meet financing gap. These may potentially include bonds, guarantees and other forms of concessional finance.

2.5.1 Traditional sources

Grants and loans are traditional financing sources for forest sector programs. Early discussions and engagement with domestic or international agencies as part of program design can facilitate identification of grant or loan funding relevant to specific components of a program and address a portion of a financing gap. This financing can come from both public and private sources.

2.5.2 Alternative sources

The growing attention to climate change priorities have resulted in the development of alternative funding sources such as bonds, guarantees and other forms of concessional climate finance. Additionally, other forms of financing such as payments for environment services can be relevant as alternative funding sources. Discussions on financing instruments relevant for an ER program can facilitate identification of alternative funding sources relevant to a program context.

2.5.2.1 Bonds

Bonds facilitate raising finances from public and private investors to invest in ER programs to meet upfront financing needs of ER programs. Bond finance can address priorities of time and scale of resources required for implementing ER program activities by allowing the issuers of bonds to raise funds from investors interested in supporting ER programs in lieu of a coupon payment for the use of bond funds. The bonds can be structured considering investor interest for fixed or variable return for the use of bond funds to implement ER programs.

Variables such as geographic coverage of an ER program, types of activities, costs of implementation, revenues from products and services, risk and return profile of programs, amount of bond principal, tenor, investor expectation on coupon and principal repayment, etc. can influence the terms of bond finance to ER programs. The steps to raise bond funds, their transfer to ER programs and subsequent repayment to investors require contractual agreements involving implementing agencies of ER programs, bond investors, provisions of emission reduction payment agreements (ERPA) negotiated for ER programs and related due diligence (in the case of the World Bank, requirements of trust funds (FCPF, BioCF ISFL) and IBRD treasury).

2.5.2.2 Guarantees

Guarantee refers to a pledge or assurance to perform obligations of another party in case of default. Guarantees can promote risk sharing among different investor participants with a view to mobilize equity and debt investment from private sources for ER programs. Guarantees can enhance the credit quality of sovereign and sub-sovereign agencies and equip them to respond to the funding needs of ER programs. By covering specific risks of private sector participation in ER programs, guarantees can promote private sector investment in ER programs.

2.5.2.3 Payment for ecosystem services (PES)

Forests provide a range of ecosystem services in addition to carbon storage. Many services such as biodiversity, water quality, soil and water conservation, nutrient cycling and erosion control are categorized under non-carbon benefits. National and provincial policies on natural resource conservation and management can facilitate improved valuation that facilitate generation of additional revenue from payments supporting ecosystem service schemes to support ER program activities.

Some countries such as Costa Rica and Vietnam have adopted policies or legal and institutional frameworks for the flow of revenues to ecosystem service schemes associated with forestry. The Pago por Servicios Ambientales/payments for environmental services program (PSA) in Costa Rica; and the payment for forest environmental services (PFES) program in Vietnam are the examples of schemes that provide payments for environmental services of forests in support of sustainable forest management and conservation. Certification schemes, like the Ecosystem Services Program of the Forest Stewardship Council recognize ecosystem services in certification. Payments for ecosystem services could be an important alternative source of finance to ER programs, but they must be specific to a program and geographic context. Therefore, the legal and regulatory basis for the flow of PES funds to ER programs needs to be assessed prior to consideration of PES as a source of finance to ER programs.

2.5.2.4 Other sources

The funding from other sources identified during the design of ER programs needs to be analyzed for their feasibility, magnitude and availability during the program period. Examples can include different forms of concessional finance, incentive schemes and revenue generating activities among others as funding sources to ER programs. The financing from other sources are likely to be program specific and therefore need to be assessed in relation to the specific ER program contexts.

2.6 Arrangements for flow of funds

The financing plan should present an overview of the arrangements for the flow of funds to provide clarity on the role of different agencies associated with financing an ER program. These arrangements depend on institutional arrangements for an ER program. It is therefore relevant to clarify the links between the operational and financing plan discussed in the ER program document to ensure clarity on the roles of financing and operational agencies associated with program implementation.

In countries where national REDD+ funds have been established to channel financing to REDD+ programs, they can potentially play a role in the fund flow arrangements for ER programs over the long-term. In the absence of a national REDD+ fund, fund flow arrangements could involve designated national, provincial and program level agencies and entities. It is useful to clarify the institutional arrangements for flow of funds from national and provincial government agencies, multilateral (e.g. FIP, CAFI, GCF), bilateral, and private agencies to ER program implementing entities and activities, including fiduciary arrangements related to flow and use of funds for program implementation.

2.7 Financial and economic analysis of ER program

The financing plan must include the results of a financial analysis and economic analysis to provide a comparative assessment of the financial and economic performance of programs. The distinction between financial and economic analysis is reflected in the treatment of cash flows, the discount rate used in the analysis of costs and benefits, the estimation of net present value (NPV) and internal rate of return (IRR) and the variables considered in the sensitivity analysis to assess the performance of an ER program.

The NPV is the difference between a project's present value of revenues and costs represented as sum of future discounted cash flows including initial investment over the lifetime of a program. If the discounted cash flow is higher than the cash flow including the opportunity cost of capital (discount rate used to

estimate the project's NPV), this is reflected by a positive NPV. The IRR is a discount rate at which discounted future cash flow is equal to zero.

2.7.1 Financial analysis

A financial analysis compares discounted revenue and cost streams to estimate the NPV of the cash flows from an ER program from the perspective of the implementing agency. The discount rate used in financial analysis reflects the financial rate of return (FRR) to an implementing agency of program.

2.7.2 Economic analysis

An economic analysis is relevant to account for the cost and benefits of an ER program to the national economy. It considers costs and benefits not directly paid for or flowing to an implementing agency. The social discount rate used in economic analysis reflects the economic rate of return (ERR) of an ER program to national economy⁵.

In programs that specify emission reduction as the sole objective, the economic analysis is expected to estimate the social benefit of avoiding or reducing GHG emissions to national economy using a shadow price of social value of carbon⁶. The Guidance on Social Value of Carbon in Project Appraisal (World Bank 2014)⁷ provides details on assessment of social value of carbon as part of economic analysis.

In ER programs that specify additional objectives, the economic analysis is expected to consider the costs and benefits of activities relevant for achieving multiple program objectives (e.g. emission reduction and livelihood benefits to communities).

In exceptional circumstances, some programs may include activities that are not amenable to financial or economic analysis due to data and other limitations. In this case, relevant clarification needs to be provided. For such activities, a description of benefits along with evidence from similar projects can be presented in the financial plan.

The World Bank's guidance note on the economic analysis of projects implemented under the *Investment Project Financing* set out in the new Operational Policy and Bank Procedure (OP/BP) 10.00 is of relevance for the preparation and review of financing plans.⁸

The FCPF REDD+ Cost Elements Assessment Tool facilitates assessment of NPV and IRR of activities observed in the reference period and those proposed for implementation in an ER program. The User Manual of the Tool provides guidance on financial and economic analysis.

⁵ The detailed guidance on economic analysis of projects is presented in Belli, P et al (1998).

⁶ Price of avoiding/abating climate change damage from a tonne of CO₂ emission to stay on an emission pathway compatible with the 2°C global target.

⁷ World Bank (2014) Social Value of Carbon in Project Appraisal: Guidance Note to the World Bank Group Staff, Washington DC.

⁸ World Bank (2013) Investment project Financing Economic Analysis Guidance Note, The World Bank, Washington DC, 29 p. http://www.ampres.com.mx/assets/guidance_note_economic_analysis.pdf

2.7.3 Discount rates

2.7.3.1 Discount rate to be used in financial analysis

The interest rate charged by financial institutions in a country on long term loans for forestry or agriculture or other land use projects can be a relevant starting point for consideration as a discount rate to be used in the financial analysis of an ER program as interest rates charged by domestic financial institutions for land sector investments reflects the cost of capital borrowed or used for investments in land based activities. A range of rates that cover long-term interest rates can help to assess the sensitivity of cost and revenue streams of a program to changes in interest rates.

2.7.3.2 Discount rate to be used in economic analysis

Considering the long-term nature of climate change impacts, a social discount rate is pertinent for economic analysis as it considers the societal priorities for sustainable management of land use activities and climate change priorities over the long-term.

The social discount rate reflects the present value of costs and benefits of climate mitigation from a reduction in emissions and an increase in removals expected from ER program activities. For countries where an estimate for a social discount rate is available, it can be used. For countries where estimates of social discount rates are not readily available, a social discount rate of six percent can be adopted⁹.

2.7.3.3 Discount rates for use in sensitivity analysis

The sensitivity analysis needs to consider a range of discount rates to reflect the impact of changes in discount rates on ER program performance. The discount rates of – /+2 percent as lower and upper bound discount rates can be relevant in relation to the base social discount rate used in economic analysis and the base interest rate used in the financial analysis. The range of discount rates used can be part of the overall sensitivity analysis of an ER program to assess variables such as changes in inputs and outputs, unit prices, and amount of financing, etc. that influence the performance of a program. This should also be discussed further in the section on sensitivity analysis of factors influencing the financing plan.

2.7.4 Social value of carbon in economic analysis

The social value of carbon reflects the value of mitigating GHG emissions as global externalities. Conducting an economic analysis of ER programs with and without the social value of carbon highlights the economic benefit of climate change mitigation of the programs. The base estimates for the social value of carbon are:

- \$30 (low \$15 and high \$50)/tonne CO₂e in 2015;
- \$35 (low \$20 and high \$60)/ tonne CO₂e in 2020; and
- \$50 (low \$30 and high \$90)/tonne CO₂e in 2030;

⁹ Based on the average annual per capita growth rate of 2.8 to 2.9 percent over the last twenty years (rounded to 3 percent) for many countries and an upper bound of 2 as elasticity of marginal utility of consumption results in a social discount rate of 6 percent (World Bank 2016).

as suggested in the Guidance on Social Value of Carbon in Project Appraisal (World Bank 2014)¹⁰ for use in World Bank projects. These figures can be relevant for the economic analysis of ER programs.

2.8 Sensitivity analysis of factors influencing financing plan

The financing plan needs to include a sensitivity analysis to reflect changes in costs and revenues of an ER program due to changes in activity data and unit prices of inputs and outputs. Change in activity data and cash flow variables can yield a range of outcomes reflecting their relative significance for program performance. Sensitivity analysis helps identify key parameters for financial and economic analysis, quantify variability associated with program outcomes, and identify appropriate adjustments to program design. The parameters of relevance for sensitivity analysis are changes in costs, revenues, financing sources, discount rates, and other program specific parameters that have significant influence on the ER program's objectives. If a range of expected costs and benefits can be established, it is conservative to use the upper range of costs and lower range of benefits. Annex 3 on the summary of financing plan provides an overview of variables included in sensitivity analysis.

The sensitivity analysis can assist in identifying key variables that have major influence on costs, revenues, cash flow streams, NPV and IRR/ERR and can facilitate suitable adjustments to the design of an ER program.

The sensitivity analysis can also assist in assessing financing risks as part of program level risk assessment conducted using the World Bank's Systematic Operations Risk-rating Tool (SORT)¹¹ and considering indicators to monitor financing risks that can potentially impact the achievement of program objectives.

3. Preparation of the financing plan

Systematic presentation of data and information is a key consideration while preparing the financing plan and in presenting financing information in a transparent manner. Preparation of the plan involves a systematic approach to the organization of data and information on costs and revenues of an ER program, identification of sources of financing, analysis of surplus or gap in funding, and conducting the financial, economic, and sensitivity analyses. Key assumptions and explanatory notes need to be clearly documented in the financing plan as it forms a basis for program implementation and is subject to review as part of program appraisal.

3.1 Revision of the financing plan

The financing plan needs to be revised and updated to reflect changes in ER program design and implementation. The financing plan also needs to be revised when new land use categories and subcategories are added to an ER program. For example, selection of land use categories and subcategories that meet data quality requirements under the ER programs of BioCF ISFL can result in

¹⁰ World Bank (2014) Social Value of Carbon in Project Appraisal: Guidance Note to the World Bank Group Staff, Washington DC.

¹¹ Guidance Note on World Bank's Systematic Operations Risk-Rating Tool (SORT)
<http://pubdocs.worldbank.org/en/972311473706061935/SORTGuidanceNote2014.pdf>

additional land use categories and sub-categories included in the ER program, which requires a revision of the financing plan.

4. Review of Financing Plan as part of World Bank's Appraisal of ER Program

The appraisal of ER programs is conducted following World Bank operational guidelines. As part of appraisal, data and information presented in the financing plan is expected to be reviewed by teams tasked with program appraisal and preparation of the program appraisal document (PAD).

The program development objective (PDO) of an ER program presented in the PAD needs to be supported with data and information on program financing in the financial plan to clarify the robustness of the program to realistically achieving the PDO. Additionally, review of the financing plan can help to identify key performance indicators for the results framework of the PAD to monitor progress in achieving the PDO.

As part of appraisal process, The World Bank country or regional economists are expected to review the financing plan of ER programs. The review may also include other program objectives that go beyond reducing emissions, which should be captured in the economic analysis and key expected results for the program.

The appraisal of the financing plan can help clarify assumptions and require a revision of the plan. The review findings can potentially form part of discussions of the World Bank decision meeting for the ER program and facilitate discussion on program financing, assessment of financing risks to program and identification of measures to address the risks at program effectiveness or during program implementation.

5. Conclusions

This guidance note is intended to assist countries in preparing ER program financing plans and to facilitate their review as part of program appraisal.

The step wise guidance together with annexes presented in this note are expected to assist program teams with guidance on organizing data and information and in preparing comprehensive plans. During early phases of ER program design, program teams need to be sensitized on the significance of the financing plan for the implementation of ER programs and necessary advice needs to be extended in preparation of financing plan.

The guidance note is also expected to assist country and regional economists and task teams in the review of financing plans of ER programs as part of the World Bank appraisal. Review findings that have relevant to the program development objective and expected performance must be discussed during a World Bank decision meeting for an ER program to ensure clarity on ER program financing, address potential financing gaps, and inform the risk assessment and results framework for the program.

This note is expected to be updated on a periodic basis based on feedback received from program teams.

References

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Annex 1

Terms of Reference Assessment of Cost and Benefits and Preparation of Financing Plan of an ER Program

These terms of reference (ToR) are intended to provide guidance to teams (staff or consultants) designing ER programs on the steps to be followed in preparation of a financing plan. The tasks to be covered under the ToR are noted below and subsequently elaborated in different sections:

1. Collection of data on land use relating to ER program activities
2. Organization of data and information on land use and land use change
3. Estimation of ER program costs and benefits
4. Sources and categories of financing
5. Analysis of financing surplus or gap
6. Options for addressing financing gap
7. Arrangements for flow of funds
8. Financial and economic analysis
9. Sensitivity analysis of factors influencing financing plan
10. Preparation of financing plan

I. Tasks

The activities to be completed under the tasks are specified below:

1. Collection of data on land use data relating to ER program activities

- Review of land use activities observed in reference and program periods to collect data on land use and associated socioeconomic variables.
- Collection of physical and socioeconomic data of land use activities in the reference and program periods from official, primary and secondary sources.

2. Organization of data and information on land use and land use change

- Review of ER program activities to identify data gaps and inconsistencies.
- Organization of data and information on land use and land use change during reference period.
- Organization of data and information on the land use activities proposed in support of REDD+ and sustainable land use during program period.
- Compilation of activity data on land use and land use change and emission factor data in reference and program periods.

3. Estimation of costs and benefits of ER Program

- Compilation of data on cost norms adopted by public and private entities for land use activities in reference and program periods.
- Assessment of different categories of costs (institutional costs, implementation costs, transaction costs and opportunity costs); and revenue streams associated with reference and program

periods. The FCPF Cost Elements Assessment Tool¹² and the Manual of FCPF Cost Elements Assessment Tool provide guidelines to assess costs and revenues of REDD+ activities. Guidelines of the manual can be used to assess costs and revenues of other land use activities of ER programs covered under the BioCarbon Fund ISFL.

- Estimation of costs and revenues of land use activities per hectare, annual and total costs (institutional costs, implementation costs, transaction costs) and revenues of ER program. Guidance on quantification of program costs using FCPF Cost Elements Assessment Tool can be provided by the Facility/Fund Management Team (FMT) of the FCPF and BioCF ISFL.
- Quantification of socioeconomic costs and benefits (income, employment etc.) of ER program activities at per hectare, province and overall program contexts.

4. Assessment of sources and amounts of financing

- Review of financing of ongoing and proposed forestry, agriculture and other land use programs involving government, bilateral, multilateral, and private sector funding in support of REDD+ and sustainable land use to assess magnitude of secured and unsecured financing available to an ER program, including financing to ongoing programs that are complementary to an ER program.
- Identification of secured, unsecured and potential sources and amounts of financing from government, bilateral, multilateral, and other public/private sources.
- Collection of data on amounts of financing from government, bilateral, multilateral, private and other sources for the activities of an ER program.
- Estimation of source-wise financing for ER program activities.

5. Analysis of financing surplus or gap

- Analysis of cash flow and sources of financing to assess surplus or gap in ER program financing.
- Estimation of financing gap, if any, for implementing ER program activities.

6. Identification of options for addressing financing gap

- Review of options to address financing gap of an ER program.
- Assessment of public and private financing sources of financing, including alternative sources (e.g. bonds, guarantees, payment for ecosystem services etc.) feasible.
- Identification of sources of financing to address financing gap.

7. Arrangements on flow of funds

- Review and analysis of institutional arrangements for flow of funds from existing and potential financing sources for implementation of ER program activities.
- Description of institutional arrangements for flow of funds to an ER program.

8. Conduct financial and economic analysis of ER program activities

- Conduct financial analysis to estimate the net present value (NPV) and internal rate of return (IRR) of land use activities associated with reference and program periods.

¹² FCPF Cost Elements Assessment Tool is an Excel based tool to quantify the costs of ER programs proposed for implementation under the FCPF Carbon Fund.

- Conduct financial and economic analysis of costs and benefits of reference and program periods considering costs and benefits (income, employment etc.) associated with land use activities of ER program to national economy.

9. Sensitivity analysis of program financing

- Conduct sensitivity analysis of costs and revenue/benefit streams of ER program activities.
- Analysis of variables influencing program costs and benefits.
- Assessment of potential impact of changes in costs, revenues and financing sources on the performance of an ER program.

10. Preparation of financing plan of ER program

- Preparation of financing plan covering costs and revenues of program activities, sources of financing, assessment of financing surplus or gap, options to address financing gap, conduct of financial and economic analysis, and sensitivity analysis of costs, revenues and sources of program financing.
- Preparation of spreadsheet annexes with data and presentation of financial and economic analysis and other supporting documentation of financing plan.
- Description of linkages between operational and financial planning and fund flow arrangements.

II. Expected outputs/deliverables:

- Inception Report: An inception report with details of work plan, methodology, and deliverables.
- Interim and Final Reports: An Interim and Final Report covering the details of land use and land use change; categories of costs (institutional, implementation, transaction and opportunity costs) and revenues/benefits of reference and program periods; and financial analysis (NPV, IRR) and economic analysis (NPV, ERR, including increase in employment and other social benefits) of the ER program. The interim and final reports need to present data and information on costs, revenues/benefits, financing and economic analysis and sensitivity analysis of ER program activities along with supporting data and documentation and spreadsheet calculations as Annexes to the report.

III. Qualifications

- Firm or individual with more than 5-year experience in conducting cost-benefits analysis, financial and economic analysis in forestry, agriculture, natural resources, and rural development projects.
- The consultant is expected to have post-graduate degree in Economics, Environmental Economics, Natural Resource Economics, Finance, or similar degree.
- Strong understanding of issues related to economics and finance of land use activities, analysis of land use change, climate change mitigation initiatives involving forestry, agriculture and other land use categories and strong understanding of GHG accounting.
- Experience in financial planning of forestry, agriculture, natural resources, and rural development programs and projects; and skills in spreadsheet data analysis.

IV. Expected number of days for completing the tasks

- The number of days anticipated for completing the tasks are _____

Annex 2

Outline of Financing Plan

The financing plan needs to present data and information on financing of an ER program along with supporting documentation. An outline of the financing plan presented in this annex provides guidance on presentation of the financing plan and can be adapted to suit the requirements of an ER program.

1. Program period

It is useful to define the program period of the financing plan which may cover the period from the date of effectiveness of an ER program until the end of program implementation which is expected to be longer than the period covered under the emission reduction payment agreement (ERPA). Therefore, the program period of the financing plan needs to be realistic and consider the duration and circumstances of program implementation.

2. Costs

The costs of an ER program can be represented under different categories - institutional costs, implementation costs and transaction costs - noted below and discussed in section 3 of the guidance note.

2.1 Institutional costs: Costs expected to be incurred in relation to program management, administration, training, capacity building; organization of stakeholder consultations; grievance redress mechanisms; conducting the strategic environmental and social assessment (SESA); implementation of environmental and social management framework (ESMF) and benefit sharing arrangements; and other costs of ER program not covered under implementation costs and transaction costs.

2.2 Implementation costs: These include costs required for implementation of ER program activities proposed to reduce GHG emissions or enhance removals by sinks and should provide details of an area proposed for implementation under different activities and corresponding cost of implementation per hectare. The implementation costs may be grouped into fixed costs and variable costs associated with implementation of program activities. The costs incurred under the fixed/administrative costs should be excluded from institutional costs to avoid double counting of costs.

2.2 Transaction costs: These include costs associated with the generation and estimation of emission reductions to meet the requirements for results-based payment contracts and transfer of emission reductions among contracting entities. These include costs related to the design of an ER program; establishment of reference emissions level; organization and operation of monitoring, reporting and verification (MRV) and database systems; management of registry operations; legal and other costs associated with implementation of emission reduction payment agreement (ERPA) contracts.

2.4 Total and annual program costs: The three categories of costs – institutional costs, implementation costs, and transaction costs are summed to calculate total and annual costs of an ER program.

3. Revenue or market value of program benefits

The data and information on revenue anticipated during each year of program implementation need to be presented in the financing plan. The annual revenue expected from different activities of a program is estimated as a sum of market value of products (e.g. timber and non-timber, agriculture, livestock etc.) and services (e.g. carbon revenue, eco-tourism) attributable to program activities.

4. Financing by source and year

The sources of financing need to be clearly identified and categorized by national and or international sources; by agency (public and private); and by category (national budget, grant, loan, equity). The details of financing from public (government, bilateral, multilateral etc.) and private (investment funds, companies and others) sources also need to be disaggregated. The source-wise and year-wise sum of financing from all sources needs to be summarized to represent the financing available in each year of ER program implementation.

The documentation on sources of financing is expected to be reviewed by the World Bank regional or country economist as part of program appraisal.

5. Financing surplus or gap

The difference in sum of costs and sources of financing reflects surplus or gap in program financing. The financing plan needs to present supporting data and information to clarify surplus or gap in financing of an ER program.

6. Options for addressing financing gap

For ER programs with a funding gap, the financing plan needs to present options proposed for addressing the financing gap. The financing options presented need to include data and information on their availability and accessibility for implementing program activities.

7. Financial and economic analysis

The program objectives influence the financial and economic analysis. In programs proposed with emission reduction as the sole objective, the economic analysis needs to consider the social value of carbon from reduction in GHG emissions. In programs with multiple objectives of emission reduction, livelihood improvement and/or ecosystem conservation, the economic analysis needs to consider the social value of carbon from reduction in emissions as well as the economic value of other benefits.

8. Sensitivity analysis of ER program financing

The costs and revenues of an ER program and its financing sources can be subject to change during program period. Sensitivity analysis of costs and benefits of ER program and sources of financing needs to be presented clarifying the details of secured and unsecured financing to highlight the factors influencing program financing. The sensitivity analysis can facilitate identification of potential financing risks to a program.

9. Arrangements for flow of funds

The financing plan needs to provide details on fund flow and institutional arrangements involving different financing sources. The documentation on flow of funds and institutional arrangements is expected to be reviewed as part of program appraisal.

Annex 3

Template - Summary of Financing Plan of an ER Program

S.no	Item	Sub-item	Activity	Finance category (grant/ loan /equity)	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total	Remarks
1	Costs	1(a) Implementation costs	Activity 1								
			Activity 2								
			Activity 3								
			...								
			Activity n								
			<i>Sub-total – Implementation costs</i>								
		1(b) Institutional costs	Program mgt & admin costs								
			Training & capacity building								
			Stakeholder consultation & grievance redressal								
			SESA, ESMF, Benefit sharing								
			Other institutional costs								
			<i>Sub-total – Institutional costs</i>								
		1(c) Transaction costs	Costs to design REL/ RL								
			Costs of MRV								
			Legal and contractual costs								

			Costs related to registry								
			Other transaction costs								
			<i>Sub-total: Transaction costs</i>								

		Total costs: 1(a)+ 1(b) + 1(c)									
2	Sources of finance	2(a) National	National budget								
			Provincial budget								
			Other public								
			Private								
			<i>Sub-total - national</i>								
		2 (b) International	Bilateral	source 1 (grant/ loan)							
				Source 2 (grant/ loan)							
			Multilateral	Source 1 (grant/ loan)							
				Source 2 (grant/ loan)							
			Private	Source 1 (grant/ loan)							
				Source 2 (grant/ loan)							
			<i>Sub-total -international</i>								
		2 (c) Revenue from products & services	Activity 1								
			Activity 2								

			Activity 3									
			...									
			Activity n									
			<i>Sub-total: Revenue from products & services</i>									
		2(d) Revenue from emission reductions	Revenue from emission reductions contracted									
		Total financing sources: 2(a)+2(b)+2(c) +2(d)										
3	Surplus/ gap	Total financing source – total costs										
4	Financing options to reduce gap	4(a) Traditional sources – grants/ loans	Option 1									
			Option 2									
		4(a) Alternative sources - (e.g. guarantees/PES)	Option 1									
			Option 2									
		Total of options for financing gap – 4(a)+4(b)										
5	Sensitivity	+ 10% costs										
		- 10% in financing										
		-10% revenue										
		+ 20% costs										
		- 20% in financing										
		-20% revenue										

		+ 30% costs									
		- 30% in financing									
		-30% revenue									
		- 2 % discount rate									
		+ 2% discount rate									
6.	Identificat ion of financing risks	Key risks impacting costs, revenues, financing etc.									
7.	Proposed measures	Measures to address financing gap/risks									

Document history

Version	Date	Notes
Version 1	August 2017	Initial version published by the FMT.