PLAN VIVO

PV Nature

PVBC Calculation Protocol

Version 1.0

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Contents

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1 Summary

This protocol details the steps that must be followed by PV Nature *Projects* to estimate the net *Biodiversity Benefits* of a *Project* and, if applicable, number of *PVBCs* that can be generated for trade.

Under the PV Nature Methodology, *Projects* must submit biodiversity survey data from *Target Groups* in combination with habitat maps and satellite imagery for calculation of *PVBCs* in line with the *PV Nature Methodology*. Survey data is used to calculate the *Pillar Metrics* and the *Multimetric* which result in the calculation of *PVBCs*. These are shared with the Project which then requires the application of this protocol to make the relevant deductions and estimate the net *Biodiversity Benefits* and *PVBC*s for issuance.

2 Sources

This protocol applies the following methodologies and tools:

- PV Nature Methodology & Data Protocol
- PV Nature Leakage Tool (under development)

3 Definitions

Definitions used in this protocol follow the latest version of the PV Nature Glossary.

4 Applicability conditions

This protocol is applicable to all PV Nature *Projects*.

5 Leakage

If there is potential for significant *Biodiversity* loss outside of the *Project Area* as a result of *Project* activities, whether due to activity shifting *Leakage* or market *Leakage*, these must either be estimated, or a conservative *Leakage* discount factor must be applied. The procedures for estimating *Leakage* or determining an appropriate *Leakage* discount factor are outlined in the PV Nature Leakage Tool (under development).

The *PDD* must describe any *Leakage* mitigation measures implemented by the *Project*.

6 Calculation of Biodiversity Benefits

6.1 Restoration Activities

The net generation of *Biodiversity Benefits* in any given year(s) (t) for restoration activities is calculated using Equation 1.

$$B_R(t) = C_R(t) \cdot (1 - LD) \qquad \textit{(Equation 1)}$$

Where:

- $B_R(t)$ – Net change in *Biodiversity Benefits* from restoration activities during year(s) t
- $C_R(t)$ – Net change in *Multimetric* during year(s) t in a restoration *Project* (see *PV Nature Methodology*)
- LD – *Leakage* discount factor representing percentage of *Biodiversity Benefits* lost due to *Biodiversity* reductions outside of the *Project Area* due to *Leakage* (see PV Nature Leakage Tool (under development))

If *Leakage* is directly estimated, the term "· (1 – LD)" should be replaced with "$-LE_R(t)$" in Equation 1.

Where:

- $LE_R(t)$ – Net *Biodiversity* reductions outside of the *Project Area* of a *Restoration Project* due to *Leakage* during year(s) t (see PV Nature Leakage Tool (under development)).

6.2 Conservation Activities

The net generation of *Biodiversity Benefits* in any given year(s) (t) for conservation activities is calculated using Equation 2.

$$B_c(t) = C_c(t) \cdot (1 - LD) \qquad \textit{(Equation 2)}$$

Where:

- $B_c(t)$ – Net retention of *Biodiversity Benefits* from conservation activities during year(s) *t*
- $C_c(t)$ – Percentage of *Multimetric* retained during year(s) t in a *Conservation Project* (see *PV Nature Methodology*)
- LD – *Leakage* discount factor representing percentage of *Biodiversity Benefits* lost due to *Biodiversity* reductions outside of the *Project Area* due to *Leakage* (see PV Nature Leakage Tool (under development))

If *Leakage* is directly estimated, the term "· (1 – LD)" should be replaced with "$-LE_R(t)$" in Equation 2.

Where:

- $LE_R(t)$ – Net *Biodiversity* reductions outside of the *Project Area* due to *Leakage* during year *t* (s) (see PV Nature Leakage Tool (under development))

7 Calculation of PVBCs

7.1 Restoration Activities

The number of *PVBCs* that can be generated by a *Restoration Project* for trade is calculated using Equation 3. This requires a 20% deduction of *PVBCs* to store in a project-specific *Risk Buffer* as required by Project Requirement 3.10 (see PV Nature Project Requirements).

$$PVBC_{restore}(t) = B_R(t) \cdot 0.8 \qquad \textit{(Equation 3)}$$

Where:

- $PVBC_{restore}(t)$ – Number of restoration *PVBC* certificates generated for year(s) *t*
- $B_R(t)$ – Net change in *Biodiversity Benefits* from restoration activities during year(s) *t*

7.2 Conservation Activities

The number of *PVBCs* that can be generated by a *Conservation Project* for trade is calculated using Equation 4.

$$PVBC_{conserve}(t) = B_c(t) \qquad \textit{(Equation 4)}$$

Where:

- $PVBC_{conserve}(t)$ – Number of conservation *PVBC* certificates generated for year(s) *t*
- $B_c(t)$ – Net retention of *Biodiversity Benefits* from conservation activities during year(s) *t*

8 Parameters

Data/Parameter	$C_R(t)$
Units	% per ha
Description	Net change in *Multimetric* during year(s) t in *Restoration Project*
Equations	Equation 1
Source	PV Nature Methodology
Value	n/a
Justification of choice of data or description of measurement methods and procedures applied	See PV Nature Methodology
Purpose of Data	Calculation of net *Biodiversity Benefits* in restoration *Projects*
Comments	Averaged across *Project Area* and final value scaled by *Project Area*.

Data/Parameter	LD
Units	Percentage
Description	*Leakage* discount factor representing percentage of *Biodiversity Benefits* lost due to *Biodiversity* reductions outside of the *Project Area* due to *Leakage*.
Equations	Equation 1, Equation 2
Source	PV Nature Leakage Tool (under development)
Value	n/a
Justification of choice of data or description of measurement methods and procedures applied	See PV Nature Project Requirement 3.12

Purpose of Data	To reduce the number of *Biodiversity Benefits* claimable, proportional to the level of risk of *Leakage* represented by project activities.
Comments	None

Data/Parameter	$LE_R(t)$
Units	% per ha
Description	Net *Biodiversity* reductions outside of the *Project Area* of a *Restoration Project* due to *Leakage* during year(s) t
Equations	Equation 1, Equation 2
Source	PV Nature Leakage Tool (under development)
Value	n/a
Justification of choice of data or description of measurement methods and procedures applied	See PV Nature Project Requirement 3.12
Purpose of Data	To reduce the number of *Biodiversity Benefits* by the estimated negative impact on *Biodiversity* measured outside of the *Project Area,* of a *Restoration Project*, attributable to *Leakage*.
Comments	This parameter is estimated after activities have occurred based on monitoring data.

Data/Parameter	$LE_R(t)$
Units	% per ha
Description	Net *Biodiversity* reductions outside of the *Project Area* of a *Restoration Project* due to *Leakage* during year(s) t
Equations	Equation 1, Equation 2
Source	PV Nature Leakage Tool (under development)
Value	n/a

Justification of choice of data or description of measurement methods and procedures applied	See PV Nature Project Requirement 3.12
Purpose of Data	To reduce the number of *Biodiversity Benefits* by the estimated negative impact on *Biodiversity* measured outside of the *Project Area,* of a *Restoration Project*, attributable to *Leakage*.
Comments	This parameter is estimated after activities have occurred based on monitoring data.

Data/Parameter	$B_c(t)$
Units	% per ha
Description	Percentage of *Multimetric* retained during year(s) t in *Conservation Project*
Equations	Equation 2
Source	PV Nature Methodology
Value	n/a
Justification of choice of data or description of measurement methods and procedures applied	See PV Nature Methodology
Purpose of Data	Calculation of net *Biodiversity Benefits* in conservation *Projects*
Comments	Averaged across *Project Area* and final value scaled by *Project Area*. It is estimated using a set number of 20 units per hectare, from which any net negative reductions in the *Multimetric* in year *t* are deducted up to a maximum deduction of 10 units, after which the value is set as 0 (see PV Nature Methodology for more information).

9 References

To view the PV Nature Methodology and Project Requirements, please visit the Plan Vivo website.