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PROGRAMME

Registry Procedures

SUMMARY

This document summarises all procedures applicable to the ERS Registry. It aims to provide clarity over its operations, administration, governance, and the efforts put in place to ensure the highest level of transparency and compliance with the carbon market requirements and regulations. This document also sets forward all security compliance elements as provided by APX as the ERS Registry third-party host.

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NORMATIVE REFERENCE

This document must be read in conjunction with the following documents:

- ERS Programme
- M001
- ERS Governance
- Validation and Verification Procedure
- ERS Anti-Fraud Policy
- Code of Ethics and Business Conduct

Registry *Guidelines*

In addition to the requirements laid out in the ERS Programme, the ERS Registry complies with the following rules.

TRANSPARENCY AND ACCESSIBILITY

1. Maintain a publicly accessible online platform where participants can access *documentation* and *operations* regarding Restoration Units.
2. Make public any disputes or challenges related to units issuance or retirement. More details can be found in our Grievance Mechanism.
3. Ensure that data privacy and security measures are in place to protect confidential information. More details can be found in ERS' Privacy Policy.

ACCURACY AND VERIFICATION

1. Allow a robust validation & verification process, in collaboration with third-party Validation and Verification Bodies (VVBs), to confirm the accuracy and legitimacy of Restoration Units submitted for registration, via independent audits of ERS-certified Projects. More details can be found in our Validation and Verification Procedure.
2. Maintain the history of every Restoration Unit and its equivalent GHG emission removal.

RETIREMENT AND DOUBLE COUNTING PREVENTION

1. Maintain a secure system for retiring VRUs, preventing double counting (double issuance, double claiming and double use) and double selling of Restoration Units.
2. Enable mechanisms to track retired VRUs and ensure they are not reintroduced into the market.

GOVERNANCE AND OVERSIGHT

1. Enable a clear governance structure with independent oversight.
2. Define roles, rights, and responsibilities & accountabilities for registry administrators, users and Account Holders.
3. Enable procedures for handling conflicts of interest among registry administrators, users and Account Holders. More details can be found in ERS Anti-Fraud Policy.

CONTINUOUS IMPROVEMENT

1. Regularly review and update its procedures and guidelines to align with evolving best practices and market developments.
2. Seek feedback from participants, stakeholders, and experts to improve registry operations and transparency. More details can be found in the ERS Procedures Manual.

Registry *Administration*

ERS REGISTRY HOSTING AND ACCESS

1. ERS Registry is hosted by APX.
2. ERS Registry can be accessed at registry.ers.org.

ADMINISTRATION AUTHORITY

ERS Registry is administered by the ERS Secretariat. Only associates of the Secretariat are authorised to perform issuance, cancelation, and conversion of Restoration Units.

ROLES & PERMISSIONS IN THE REGISTRY

1. ERS Registry offers four distinct roles, each with specific permissions and responsibilities. These roles are built-in to the technical specificities of our registry and cannot be bypassed.

    1.1. **Registry Administrator.** Registry Administrators have the highest level of permissions, including the management of units, Projects, and users. This role is held by the Director of ERS Secretariat.

    1.2. **Secretariat.** Secretariat users can issue and manage units, including the ability to convert, transfer and cancel PRUs and VRUs.

    1.3. **Certification**. Certification users are responsible for creating and managing Projects within the Registry. They have the capability to upload Project-related files and update Project status.

    1.4. **Account Holder.** Account Holders (such as Developers or Restoration Unit Buyers) have the authority to hold Restoration Units in their accounts and manage them, including transferring and retiring units.

GOVERNANCE AND OVERSIGHT

1. The governance of the ERS Registry includes ensuring that roles and permissions are assigned and managed effectively. To maintain integrity and transparency within the Registry, governance mechanisms include:
    1.1. The ERS Secretariat's commitment to enforcing Registry's procedures.
    1.2. Annual reviews of user permissions and roles to prevent unauthorised access.
    1.3. Annual audit of the ERS Secretariat, Registry, and certification by a third-party Auditing Body.

COMPLIANCE WITH REGULATIONS

1. The ERS Registry will adhere to all relevant regulations and standards governing carbon markets, including but not limited to the following accreditation schemes:
    1.1. CORSIA
    1.2. ICROA
    1.3. IC-VCM
2. The ERS Registry publicly commits to supporting initiatives working to enable transparency in the carbon market, notably CADTrust.

CONTINUOUS IMPROVEMENT

The ERS Registry is committed to continuous improvement in its operations and user experience. Feedback from users and stakeholders is actively sought to enhance the Registry's functionality and ensure alignment with best market practices. More details can be found in ERS Programme.

Registry *Operations*

ACCOUNT CREATION

1. All Registry Account Holders must:

    1.1. Accept the ERS Registry Terms and Conditions.

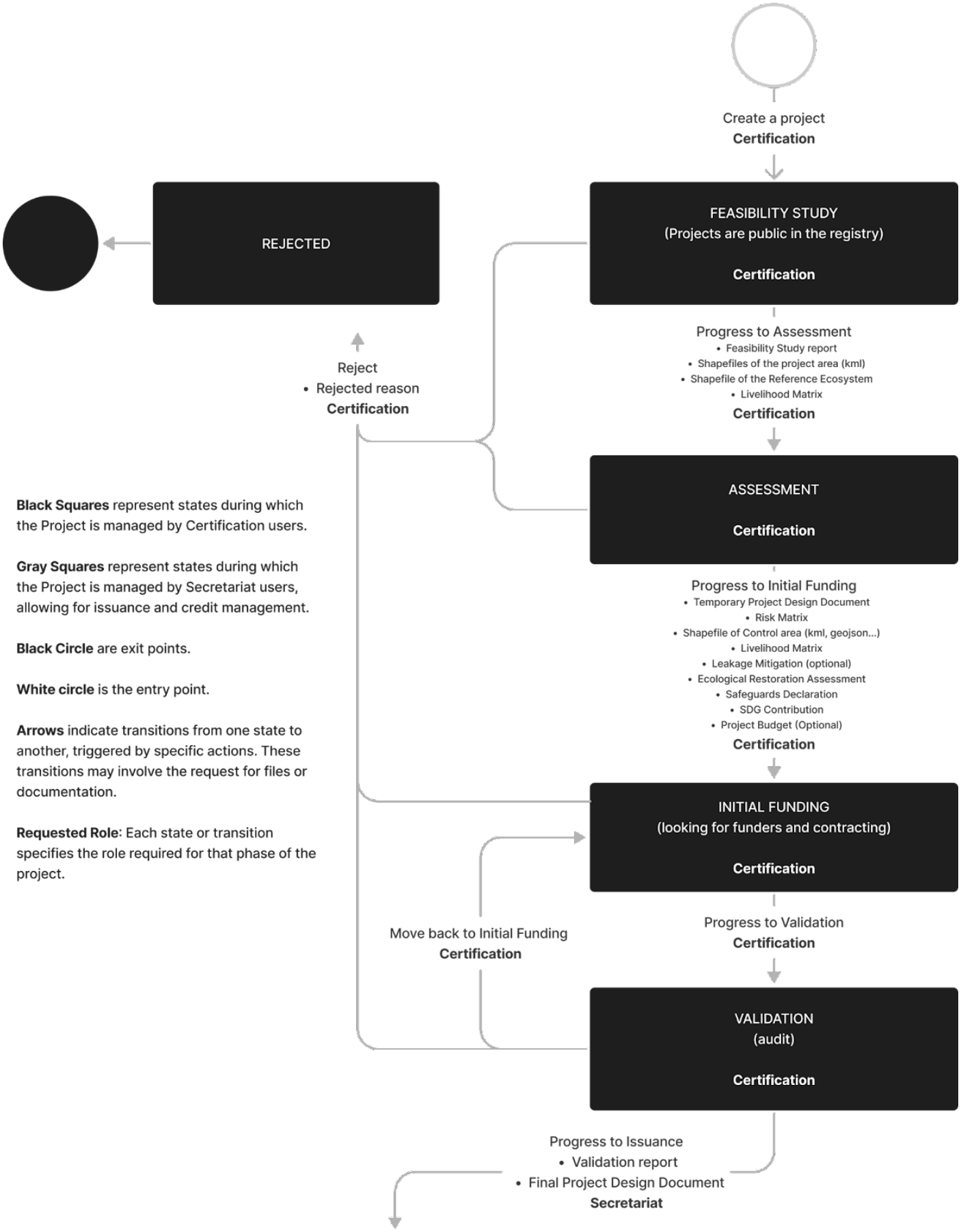
    1.2. Go through KYC/AML verification. Detailed information about the protocol can be found in the Anti-Fraud Policy.

PROJECT CREATION

1. Projects within the ERS Registry are initiated by the ERS Certification team.
2. Projects are created under the ERS account. Each Project undergoing ERS certification has a registry page under ERS' account, called Project Page.
3. The Project lifecycle commences with the status "Feasibility Study."

PROJECT LIFECYCLE

The Project lifecycle is visualised using a State Machine, which illustrates the progression of a Project through various states and the user-roles responsible for managing each state. The State Machine is a visual representation of the Project lifecycle, ensuring clarity and consistency in managing Projects within the ERS Registry.



Black Squares represent states during which the Project is managed by Certification users.

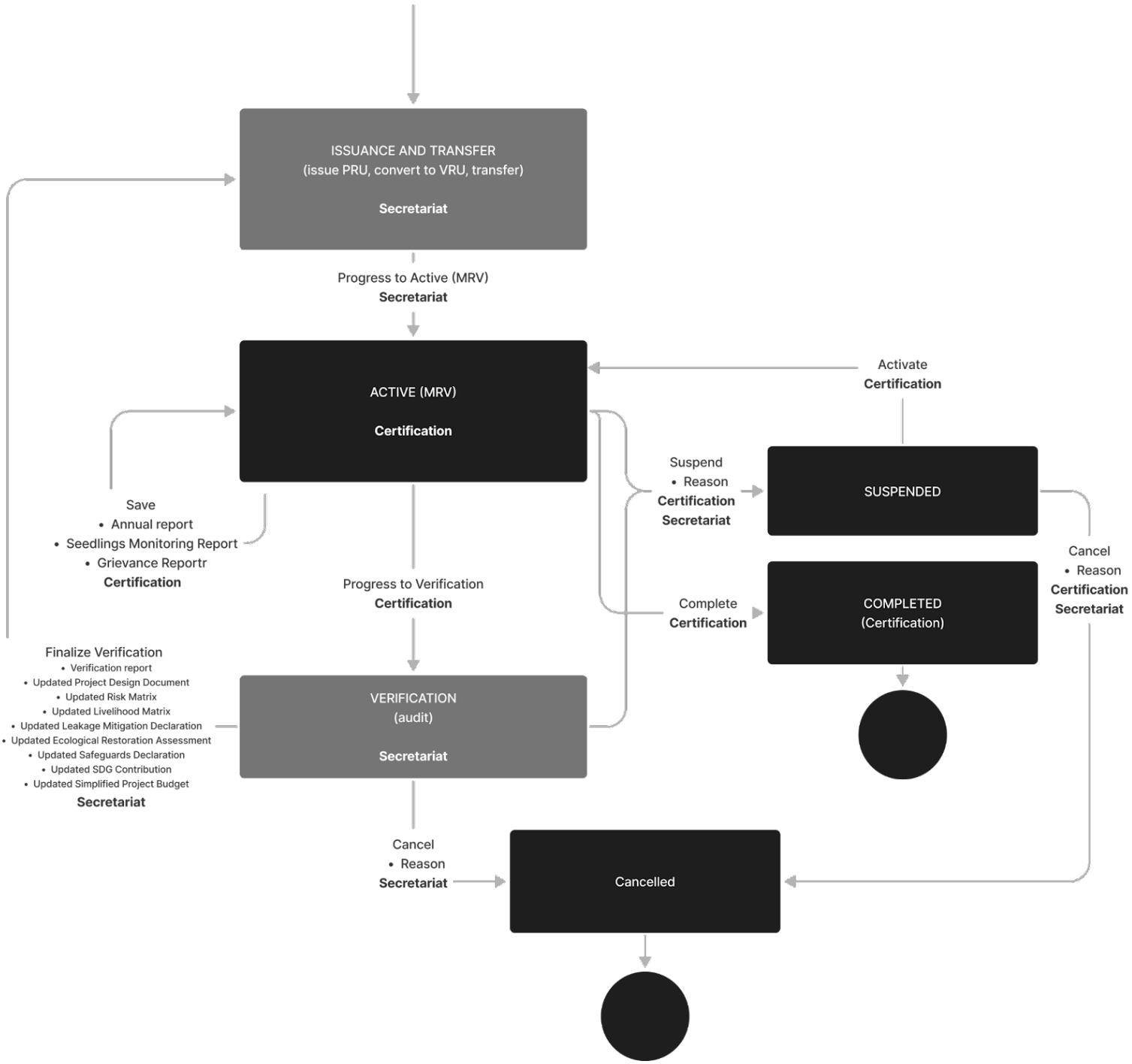
Gray Squares represent states during which the Project is managed by Secretariat users, allowing for issuance and credit management.

Black Circle are exit points.

White circle is the entry point.

Arrows indicate transitions from one state to another, triggered by specific actions. These transitions may involve the request for files or documentation.

Requested Role: Each state or transition specifies the role required for that phase of the project.


ISSUANCE AND TRANSFER
(issue PRU, convert to VRU, transfer)
Secretariat
Progress to Active (MRV)
Secretariat
ACTIVE (MRV)
Certification
Activate
Certification
Suspend
• Reason
Certification
Secretariat
SUSPENDED
Save
• Annual report
• Seedlings Monitoring Report
• Grievance Reportr
Certification
Progress to Verification
Certification
Complete
Certification
COMPLETED
(Certification)
Cancel
• Reason
Certification
Secretariat
Finalize Verification
• Verification report
• Updated Project Design Document
• Updated Risk Matrix
• Updated Livelihood Matrix
• Updated Leakage Mitigation Declaration
• Updated Ecological Restoration Assessment
• Updated Safeguards Declaration
• Updated SDG Contribution
• Updated Simplified Project Budget
Secretariat
VERIFICATION
(audit)
Secretariat
Cancel
• Reason
Secretariat
Cancelled

DOCUMENTATION

This section outlines the documentation requirements within the ERS Registry, detailing when and which documents the ERS Certification and Secretariat teams are responsible for uploading throughout the certification process.

These requirements ensure the transparency and accountability of the certification process, and support the ongoing measurement, reporting and verification of Projects.

1. **Feasibility Study Phase.** At the conclusion of the Feasibility Study phase, ERS Certification is required to upload the following documents:

    1.1. **Feasibility Study Report.** A comprehensive report detailing the Feasibility study's findings and outcomes.

    1.2. **Shapefile of the Project Area.** Geographic information system (GIS) shapefiles providing spatial data related to the Project.

    1.3. **Shapefile of the Reference Ecosystem.** Geographic information system (GIS) shapefiles providing spatial data related to the Project's Reference Ecosystem.

    1.4. **Livelihood Matrix.** Only the Stakeholder Mapping tab is presented at this stage.

2. **Assessment Phase**. Upon completing the Assessment phase, ERS Certification must upload the following documentation:

    2.1. **Provisional Project Design Document.** A preliminary document outlining the project's design and key elements.

    2.2. **Risk Assessment Matrix.** An assessment of the Project risks and their potential impacts.

    2.3. **Shapefile of Control Plots.** Geographic information system (GIS) shapefiles providing spatial data related to the control area used to calculate the Project dynamic baseline.

2.4. **Livelihood Matrix.** Complete assessment of the Project's stakeholders livelihood baseline.

2.5. **Leakage Mitigation Declaration.** (if applicable) Document declaring foreseeable Project-led leakage and its mitigation plan.

2.6. **Ecological Restoration Assessment.** Complete assessment of the Project's area ecological recovery baseline.

2.7. **Safeguards Declaration.** Developer's declaration of environmental and social safeguards in place during the Project.

2.8. **SDG Contribution.** Project's identified contribution to the host country's SDG commitments.

2.9. **Project Budget**: A budget document providing a simplified overview of project expenses and funding.

3. **Validation Phase**. At the conclusion of the Validation phase, ERS Secretariat is responsible for the submission of the following documents:

3.1. **Validation Report**: A report summarising the validation process and its results.

3.2. **Final Project Design Document**: The finalised project design document, including all necessary details and specifications.

4. **Annual Requirements.** On an annual basis, ERS Certification is required to upload the following document:

4.1. **Annual Report**. An yearly report providing an update on the Project's progress, performance, and any significant changes.

4.2. **Seedlings Monitoring Report.** (until year 4) annual reports on seedlings growth.

4.3. **Grievance Reports.** (if applicable) Report any grievance filed against a Project. Composed of the claim, investigation findings and conclusion.

5. **Verification Phase.**

5.1. Every two years, at the end of the Verification Phase, ERS Secretariat is responsible for providing the following documentation:

5.1.1. **Verification Report**: A report summarising the verification audit, including findings and results.

5.2. Every four years, at the end of the Verification Phase, ERS Certification is responsible for providing the following documentation:

5.2.1. **Verification Report**: A report summarising the verification audit, including findings and results.

5.2.2. **Updated Project Design Document**: Any necessary updates or revisions to the project design document.

5.2.3. **Updated Risk Assessment Matrix**: An assessment of project risks and their potential impacts.

5.2.4. **Updated Livelihood Matrix.** Complete assessment of the Project's stakeholders livelihood baseline.

5.2.5. **Updated Leakage Mitigation Declaration.** (if applicable) Document declaring foreseeable Project-led leakage and its mitigation plan.

5.2.6. **Updated Ecological Recovery Assessment.** Complete assessment of the Project's area ecological state.

5.2.7. **Updated Safeguards Declaration.** Developer's declaration of environmental and social safeguards in place during the Project.

5.2.8. **Updated SDG Contribution.** Project's identified contribution to the host country's SDG commitments.

5.2.9. **Updated Project Budget**: A budget document providing a simplified overview of project expenses and funding.

ISSUANCE

1. Issuance Authorization

1.1. The issuance process within the ERS Registry occurs during the "Issuance and Transfer" status.

1.2. Only Secretariat users possess the authorisation to issue Restoration Units.

2. Issuance Allocation

2.1. Upon issuance, 20% (rounded up) of PRUs is allocated to ERS Buffer Pool's account.

2.2. The remaining 80% (rounded down) can subsequently be transferred to various Account Holders by the Secretariat.

3. Addressing Erroneous Issuance

3.1. Erroneous issuance are considered:

3.1.1. The issuance of PRUs that do not exist.

3.1.2. The allocation of Restoration Units, PRUs or VRUs, that do not belong to the Account Holder to which it was credited.

3.2. Every issuance goes through a redundancy system, under which an ERS Secretariat Agent issues Restoration Units, and another ERS Secretariat Agent reviews all issuances of the past week.

3.3. If an erroneous issuance is identified, a report is filed and the Restoration Units in question are cancelled by the ERS Secretariat Agent.

3.4. Account Holders are subsequently notified of the issue.

3.5. It is essential to note that as the Registry Administrator, ERS Secretariat, retains the authority to cancel erroneously issued assets on behalf of any Account Holder.

3.6. These measures ensure the integrity and accountability of the issuance process within the ERS Registry, safeguarding against errors and discrepancies.

CONVERSION

1. **Conversion Authorisation**. Conversion of PRUs to VRUs can only be done by Secretariat users. This conversion action can take place exclusively when the Project status is “Issuance and Transfer”.

2. **Volume Calculation.** The volume of PRUs to be converted into VRUs is determined in the *Units & Issuance* section of ERS Programme. This calculation ensures accuracy and transparency in the conversion process.

3. **Distribution of Converted Units.** Upon successful conversion, PRUs will be converted into VRUs in a serial manner, with each PRU having a unique serial number determining its conversion order.

TRANSFER

1. Secretariat-Initiated Transfers

1.1. Secretariat users possess the authority to initiate transfers of PRUs and VRUs. These transfers can originate from the Project Account and be directed to any Account Holder's account.

2. Account Holder-Initiated Transfers

2.1. Account Holders have the autonomy to initiate proprietary PRUs and VRUs transfers at their discretion. This transfer privilege is not restricted by project status, allowing Account Holders the flexibility to manage their units as needed.

2.2. Erroneous transfers initiated by an Account Holder are not remediated by ERS.

CANCELLATION

1. Cancellation Events

1.1. Unit cancellations within the ERS Registry are initiated by the ERS Secretariat in response to:

1.1.1. A reversal event. For more details about reversal events, please refer to the *Reversal Procedure* section in ERS Programme.

1.1.2. A double counting event, in the context of Article 6 transfers. For more details about double counting, please refer to the *Double Counting* section in M001.

2. Secretariat's Authority

2.1. The Secretariat exclusively possesses the authority to cancel VRUs in the Buffer Pool whenever a reversal is identified and measured. This process aims maintain the accuracy and integrity of the registry by compensating Restoration Units that are no longer valid due to reversals.

3. Reversal Events

In case of Reversals, the Secretariat must follow a systematic cancellation approach detailed below:

3.1. **Step 1 - Loss Events Quantification.** ERS quantifies Loss Events annually. Refer to the *Quantification of Loss Events* section in the Quantification Methodology for Terrestrial Forest Restoration for more details.

3.2. **Step 2 - Reversal Quantification.** At Verification, ERS determines if the impact of loss events resulted in Reversal or not. If Reversal is confirmed, their nature - avoidable or unavoidable - is established pro-rata to the loss events. Refer to the *Reversal Procedure* section in the ERS

Programme and to the *Quantification of Loss Events* section in the Quantification Methodology for Terrestrial Forest Restoration for more details.

3.3. Step 3 - Reversal Accounting. The quantified Reversal is accounted for the Verification cycle's RUs issuance. Refer to the *Carbon Stock Accounting* section in the Quantification Methodology for Terrestrial Forest Restoration for more details.

3.4. Step 4 - VVB Verification. An accredited VVB presents the ERS Secretariat with a Verification Report. If the audit confirms the Reversal accounting, the Secretariat will proceed to cancellation. Refer to the *Reversal Procedure* section in the ERS Programme for more details.

3.5. **Step 5 - Notification.** The Developer associated with the affected VRUs is notified by ERS, via email, of the incoming cancellation event, and if it has been considered as 'avoidable' or 'unavoidable'. Refer to the *Reversal Procedure* section in the ERS Programme for more details.

3.6. **Step 6 - Cancellation.** The ERS Secretariat must cancel VRUs in the Buffer Pool in an amount equal to the net carbon dioxide equivalent loss during the Verification Cycle as full compensation for the Reversal.
Refer to the *Reversal Procedure* section in the ERS Programme for more details.

3.7. **Step 7 - Unit Replacement (if applicable).** If the Reversal has been qualified as avoidable, the Developer must deposit VRUs issued by the Project or other ERS-certified Projects in the Buffer Pool in an amount equal to the net carbon dioxide equivalent loss of the verification period.

4. Double Counting

4.1. **Step 1 - Identification and Quantification.** The Secretariat identifies the double counting event following the double counting principles in the M001.

4.2. **Step 2 - Notification.** The Developer is notified and must activate its mandatory compensation mechanism, as detailed in the Avoiding Double Claiming guidelines. The mechanism guarantees that any double-claimed units for which a corresponding adjustment has not been made will be replaced with a volume of eligible credits corresponding to the number of units that were double-claimed.

4.3. **Step 3 - Cancellation.** The Secretariat must cancel the replaced units provided by the compensation mechanism as full compensation for the double counting.

5. Documentation and Record-Keeping

5.1. The ERS Registry publicly discloses the content of the Buffer Pool, including details about the origin of Restoration Units such as the Project type, vintage, etc.

5.2. The ERS registry publicly discloses on every Project page:

5.2.1. Project ID

5.2.2. Project Name

5.2.3. Country

5.2.4. Region

5.2.5. Geographic coordinates on a map

5.2.6. Project description

5.2.7. Project Developer

5.2.8. Type

5.2.9. Methodology

5.2.10. Status

5.2.11. Labels

5.2.12. Project registration

5.2.13. Crediting period start

5.2.14. Crediting period end

5.2.15. Project size (hectares)

5.2.16. Annual Reports containing all loss events, including those leading to cancellations.

5.2.17. Project Design Documents

RETIREMENT

1. Identifying The Retirement Reason

1.1. Account Holders must select the retirement reason from the following list of options:

1.1.1. **Compensation Claim.** When the retirement aims to balance or neutralize the negative effects of GHG emitted.

1.1.2. **Contribution Claim.** When the retirement aims at adding up to GHG reduction efforts, but does not replace or balance emissions.

2. Retirement on Behalf of a Specific Entity

2.1. Account Holders are required to retire Restoration Units on behalf of a specific Legal Entity or Individual, ensuring that the retirement is attributed to the rightful owner.

3. Documentation

3.1. Documentation of the retirement action includes:

3.1.1. The Account Holder requesting the retirement

3.1.2. The legal entity or individual favoured by the retirement

3.1.3. The chosen retirement reason and any supporting details

3.1.4. This documentation is recorded and maintained within the ERS Registry for transparency and verification purposes.

INTER-REGISTRIES OPERATIONS

1. Definition

Inter-registries operations involve the interaction and exchange of carbon credits and related data between different carbon registries or platforms. These operations may include credit transfers, retirement tracking, and credit issuance across multiple registries.

2. Transfer Restrictions

As of the current policy and operational framework, ERS' Restoration Units held within the ERS Registry cannot be transferred out from the APX registry. This restriction is in place to ensure the integrity, tracking, and transparency of ERS credit transactions while maintaining consistency within the APX registry ecosystem.

3. Future Considerations

3.1. ERS remains committed to exploring opportunities for inter-registries operations that align with industry standards and regulatory requirements. Future considerations may include potential collaborations, partnerships, or regulatory changes that enable the secure and compliant transfer of ERS units between registries.

3.1.1. ERS follows closely the work done by Climate Action Data Trust and is willing to connect the ERS Registry at a more developed stage.

4. Compliance and Adaptation

ERS is committed to monitor industry developments, regulatory changes, and best practices related to inter-registries operations. The organisation is

prepared to adapt its policies and procedures as needed to facilitate such operations while maintaining the highest standards of transparency and accountability.

Labelling and *Serialisation*

This section outlines the principles of labelling and serialisation within the ERS Registry, highlighting their role in ensuring the uniqueness and traceability of Restoration Units.

UNIQUENESS

1. Each Restoration Unit within the ERS Registry is unique and represents one tonne of carbon dioxide equivalent removal. To maintain this uniqueness, the following principles apply:

    1.1. **Ownership**: A unit is owned by only one account at a time within the ERS Registry.

    1.2. **Transfer**: A unit can be transferred to only one account at a time within the ERS Registry.

SERIALISATION

Serialisation is a critical aspect of units management. It ensures transparency, accountability, and protects against risks of double counting. The ERS Registry employs a unique serialisation methodology.

1. All units within the ERS Registry are assigned a unique serial number with the following format:

    ERS-[project type]-[project id]-[countrycode]-[unit type]-[issuance date or vintage]-[batch]-[block start]-[block end]

2. System Identifier or Originating Registry: ERS

3. Project Type:

3.1. 0 - for Reforestation

3.2. 1 - for Terrestrial Forest Restoration

4. Country Code
5. Unit Type
6. Issuance date (for PRU) or vintage (for VRU)
7. Batch Number: Numeric value assigned to each batch of credits per originating issuance.
8. Serial Block Start: Numeric values assigned by the registry from 1 - 999,999,999.
9. Serial Block End: Numeric values assigned by the registry from 1 - 999,999,999.

These unique and immutable serial numbers allow for the complete traceability of each unit throughout its entire lifecycle.

PUBLIC INFORMATION AND CROSS-REFERENCE

Information about the Project's location is made available on the Project page, using the project-ID represented in the serial number. Stakeholders can cross-reference this information with Project publications that provide geodetic coordinates, ensuring transparency regarding each unique unit's country and sector of origin, vintage, and original (and, if relevant, revised) Project registration date.

LABELLING

1. Assets meeting the eligibility requirements for ICAO's CORSIA, ICROA, and IC-VCM are labelled as such. Labels are reflected in the data warehouse views.
2. Retroactive labelling is applied for previously issued units, ensuring compliance with international standards.

Conflicts of *Interests*

PREVENTING CONFLICTS OF INTEREST

ERS is committed to preventing conflicts of interest in the governance and provision of registry services through robust policies and processes. The primary measure in place is the clear separation between the Certification and Secretariat teams at the registry level.

1. **Certification/Secretariat Scopes**: The roles and permissions of the Certification and Secretariat teams are carefully defined to minimise any potential conflicts. Each team has specific responsibilities, ensuring a clear and distinct division of tasks. More information is available in the ERS Governance document.

2. **Conflicts of Interest provisions**: ERS has established explicit conflict of Interest policies that are readily accessible to all relevant parties, outlining the principles and guidelines to prevent conflicts and promote transparency. ERS mandates its Agents to avoid conflicts of interest that interfere with ERS' objectives, encompassing financial, commercial, and fiduciary conflicts. Agents must declare all actual and potential conflicts, and failure to do so may result in the termination or adjustment of their role within ERS. Agents' external interests, relationships with immediate family members in business contexts, and misuse of ERS resources are subject to strict guidelines. More information is available in ERS' Code of Ethics and Business Conduct and Anti-Fraud Policy policy documents.

DETECTING AND ADDRESSING CONFLICTS OF INTERESTS

In cases where conflicts of interest arise, ERS ensures that they are appropriately declared, addressed, and isolated. Refer to ERS Anti-Fraud Policy and Code of Ethics and Business Conduct for more details.

Security *Compliance*

All information contained in this section was provided by APX (the registry service provider) through electronic mail and was received by ERS on August 16, 2023 as part of the contractual relationship between the companies.

SOC2

The registry technology provider has been SOC2 certified since 2018 and recently concluded its 2022 audit. The audit affirms that they conform to Trust Services Principles and Criteria for Security, Availability and Processing Integrity by the American Institute of Certified Public Accountants (AICPA). The completion of this audit provides additional assurance that the technology provider designs and implements services according to the highest standards to protect the availability of the ERS Registry, and execution of internal processes.

MAINTENANCE OF SOFTWARE AND HARDWARE

1. The registry technology provider utilises rich web-based client technology, working based Angular UI framework and Java mid-tier server application and associated services, leveraging Azure-hosted replicated SQL Server databases to provide a robust underlying data service. This ensures high-speed storage that permits the retention of multiple years of transaction-level historical data online, and includes:

    1.1. Fully redundant data centre locations in geographically separated regions of the United States;

    1.2. Fully redundant network infrastructures in each data centre location and Operations facility;

    1.3. Data replication between the data centres and off-site backup of the database; and

1.4. Off-site operations facilities to handle the program in the event that the primary Operations facility cannot be used. This includes workstations, network access, and automated phone rerouting.

DISASTER RECOVERY

1. The system will be backed up for two types of failures:

   1.1. Loss of the hardware due to damage;

   1.2. Data loss or data corruption.

2. For "loss of hardware," the "image" backup method is used. The "image" allows the operating system to be re-constructed in a short period of time once the damaged hardware has been repaired.

3. For "data loss or data corruption," the provider electronically places multiple copies of the database backup across geographically distributed storage. This allows to retrieve and, if necessary, restore the data to the same or different hardware.

4. Ad-hoc backups (archives) of the databases are a normal course of operation for the registry. This is currently employed by the registry technology provider in their database operations and is executed as required. The archived backups are stored using the previously described redundant, geographically distributed storage.

5. Recovery of the Operating System, Application, or Database will use existing procedures which include some of the following:

   5.1. Reload of the database from a known recovery point using the "backed up" copy of the database.

   5.2. Reload of the database to a known recovery point using the database transaction logs applied to the restored database created from a "backed up" copy.

5.3. Reload of the database on the existing production system or test system available as part of our SaaS services.

6. Backups are maintained for a minimum of two (2) weeks.

NETWORK SECURITY

The registry technology provider data centres are protected using industry-standard equipment and access methods, including firewalls and other associated networking infrastructure with fine-grained policies defining exactly which traffic is allowed into and out of the servers, both from internal services as well as the public internet. Their Network Security Group model allows the provider to ensure only traffic appropriate for their applications is allowed into the environment. Events related to the networking and application infrastructure are recorded to a central console that will be monitored 24-hours/day by dedicated security staff who will review reported events of excessive login failures and report the events to the appropriate staff.

SERVER SECURITY

Server systems are deployed with fine-grained access policies. Direct access to the servers is only allowed for approved personnel responsible for the administration of infrastructure. Personnel access to the servers is only allowed from the registry technology provider's Corporate network. There is no direct access to the servers from the internet. Servers have anti-virus and file system monitoring utilities that report events to a central console monitored by the 24-hour operations group and IT security staff. Login/authentication events are recorded and available for review. Backup of each server's operating system is taken to allow for the quick restoration of a server in the unlikely condition that the system becomes unavailable.

DATABASE SECURITY

1. The database configuration will be performed to allow appropriate access to records depending on the individual's roles/privileges:

    1.1. Users are only able to access and modify the records appropriate for their function.

1.2. The Administrator is only able to access and modify the records appropriate for their function.

1.3. Staff responsible for the maintenance of the system have only the minimum level of access to the database needed to complete their job function.

1.4. Database administrators have full access to the database records. This is required for them to fulfill their job function.

1.5. IT staff have no access to the system database.

1.6. Access to the database is available to the regular application users and application users with Administrator roles solely via the application user interface. Direct access directly to the database is not allowed for such users.

2. Under no circumstances direct access to the database can occur directly from the internet.

APPLICATION SECURITY

Access to application features is based on the Account and privileges granted to the authenticated user. Login name and password will be used to authenticate each user. Multi-factor authentication is also available. Each user is assigned a role. The role grants the user access to a set of modules and also dictates specific data records that the user is entitled to have access to. Each module provides for a set of functions that enables the user to accomplish a task or set of tasks. Each attempt of a login, success or failure is recorded in the system log for review by the System Administrator login role.

END-USER SECURITY

1. Access to the Registries is done via SSL/HTTPS-secured communication. Individual users are challenged for their unique username and password in order to access the application. Additionally, multi-factor authentication is available if desired to be in place. Only once the username and password are

authenticated and the second factor authentication completed, the user is presented with the home page of the application. To protect the integrity of passwords, passwords are required to adhere to the following rules: 8 to 16 characters in length; at least one lower case character, at least one upper case character, at least one digit, and at least one special character.

2. To ensure compliance with security provisions, ERS regularly audits and evaluates the security measures in place within the registry. The specific protocols and processes are as follows:

    2.1. Security and Provisions for Regular Security Audits: ERS conducts periodic security audits or evaluations to assess the effectiveness of security provisions.

    2.2. Clarification: The nature of the audit or evaluation may encompass both ERS's auditing of the registry provider's security processes and protocols and the verification of evidence regarding the registry provider's security practices. The exact scope and details of the audit are determined based on the specific requirements and standards.

3. These provisions highlight ERS' commitment to preventing conflicts of interest, addressing them when they arise, and ensuring compliance with security provisions through regular audits and evaluations. These measures seek to maintain the integrity, transparency, and security of the ERS Registry.

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