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Document version control

Our documentation version control has been develop to recognize the different changes that are being implemented by the team at EcoRegistry. The environmental assets are evolving constantly, and the registration platform must evolve constantly to comply with the highest standards. The table below will define a general view about the modifications and the different versions according to them.

Version	Date	Author	Description
V-0.1	11/12/2021	Juan Duran	First draft including the general Workflow of the process
V – 0.2	27/07/2022	Juan Duran	Inclusion of the purpose, introduction and principles of EcoRegistry
V – 0.3	15/08/2022	Juan Duran	Refining of the Carbon cycle
V – 1.0	12/11/2022	External review	Final review of the document and conclusion
V – 1.1	07/03/2023	Valentina Mondragón	Explanation about the carbon accounting process
V – 1.2	10/04/2023	Valentina Mondragón	Description of the grievance's procedure through the platform
V – 2.0	13/04/2023	External review	Final review of the document

Table 1. Document versions







Who we are

Our origin defines EcoRegistry as a platform that aims to help more sustainable development initiatives to come true and bring trust to the market participants. After understanding the needs of information management system for sustainable development and the importance of the results to tackle climate change, our founding team decided to implement technology to boost sustainable development. EcoRegistry may be a registry system for carbon crediting programs at the moment, but we are evolving constantly to meet what the world needs in order to have more initiatives implemented.

Our core functionality has been to develop a registry system for specific carbon offsetting programs, safeguarding the information that supports each carbon credit and tracking each one, where it comes from and where it goes to (used by an end beneficiary). At EcoRegistry we favor connectivity between multiple platforms to facilitate information exchange and transparency. We offer our services of registry systems to Carbon offsetting standards (Programs), Countries for NDC registry systems and any other organization that needs to register information about climate assets according to our transparency requirements and international information management standards.

Trust is built with clear and traceable information that can be accessed in EcoRegistry's accounting system, which ensures the avoidance of double counting of climate assets transactions (issuance/claim). Our accounting system utilizes the virtues of a Blockchain system but implemented on a virtual private network. EcoRegistry as a software-based company is in constant development and implementation of pilot projects and new technologies like digitized MRV solutions, connectivity platforms, system control / risk management and automated reports and information for end users.

By focusing on bringing technological solutions to support the development of all sustainable development initiatives we are building a trust and confidence for groups of interest in sustainable activities. The development of the climate assets environment will boost climate action, the reason why EcoRegistry is evolving constantly to always bring the newest technology and tested systems at the service of the people. This means that we are a registry system now, but we continuously evolve to include functionalities to our platform, always with the following pillars on mind:

- **Simplicity and Agility:** Our system must always be simple to offer agility for the project developers. It must also offer simple access to all the information that supports each climate asset to ensure that the public is able to make an informed decisions when connecting to any of the projects on our platform.
- **Connectivity:** The platform will have multiple ways to connect to other platforms to exchange information and boost the implementation of new initiatives for sustainable







development. Connectivity means also that these connections are implemented with a rigorous methodology to maintain the integrity and quality of each climate asset.

- **Transparency:** To bring integrity and trust to the climate asset markets, EcoRegistry must provide transparent information and traceability of the projects and all climate assets.

Purpose of this document and intellectual property rights

The official document from EcoRegistry will always be published on our website <u>www.ecoregistry.io</u> and it may be used and is public to be shared and contribute to the development of a robust ecosystem.

Integrity and trust will be achieved by sharing information and contributing to the ecosystem from all perspectives. This document represents the proposal from EcoRegistry to have a worldwide information exchange system, so that anybody around the globe has access to the information about sustainable development projects.

We hope this document is useful for you, your team, your company and your country.

Please enjoy it!

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Introduction

The Paris Agreement is an international binding treaty with over 190 signatory countries committed to reduce their greenhouse gas emissions and limit the increase of global temperature below 1.5°C. The Parties are expected to submit their Nationally Determined Contributions (NDCs) as an action plan to tackle climate change and increase resilience in the territories. A key step in this process will be the adoption of the 2020 Paris agreement NDCs on climate and ecosystems. These will enable an implementation period to take full effect.

The implementation of the Paris Agreement and the definitions described in Article 6 require the development of registry systems that are capable of tracking emissions, reductions and avoidances of Greenhouse Gas Emissions. The Article 6 of the Paris Agreement provides insight on how to foster the achievement of mitigation targets by implementing cooperative, market and non-market approaches, and gives an overview of the market's performance in the next few years. A carbon credit registry provider needs to be aware of the evolution of the international regulated and voluntary markets and must be able to quickly adapt by implementing necessary modifications within its platform to alleviate the market's and its stakeholder's demands. One of the most pressing challenges faced by the Article 6 is to guarantee the avoidance of double counting carbon emissions, an issue that must be addressed by carbon credit registries to promote trust for buyers.

To achieve the goals stated on each country's NDC, all the information about reduction projects, avoidances and emission of greenhouse gases must be shared between all actors. Connectivity and information will be the backbone to support the decision making for the climate positive future. For this reason, at EcoRegistry we have decided to develop this document that explains the data base model and the interfaces that can be used for this information exchange.

At EcoRegistry we consider ourselves as a technology solutions providers that constantly looks for the best way of promoting and boosting the implementation of climate positive activities and projects. Our solutions will be implemented at the service of our customers to provide transparency, trust and agility to any climate assets markets. For this purpose, we have stablished a registry system under our core principles of operation and we continuously evolve according to the needs of the planet.

Our Principles

We list our principles in each document for the people to understand our how we make decisions at our company. The principles in this section set out the fundamental rules and concepts for governing EcoRegistry's administration system. Our principles have been created to comply with international information management standards such as ISO 27001 and the understanding of the principles is important for all stakeholders.



Transparency

Information about each one of the projects and the participants of the platforms must be genuine, clear, appropriate, sufficient, and auditable by third independent parties. All stakeholders should have a clear understanding of the information displayed on EcoRegistry and there should always be a way of contacting us to review further information. To bring integrity and trust to the climate assets markets, EcoRegistry must provide transparent information and traceability of the projects and all climate assets.

Technological vanguard

Our team is constantly developing new solutions to support the technological approaches of boosting the implementation of sustainable development initiatives. The constant evolution of the platforms and information systems is our purpose and we set out to help our customers with all their endeavors. This means that today EcoRegistry is a registry system, but our system evolves constantly according to the needs of the market and can change to any other kind of solution.

Connectivity

One of the most recognized ways of scaling solutions is the possibility to connect with others around the world. Connectivity goes beyond connecting supply and demand and must involve all groups of interest to bring trust and reliability to the system. Users need access to information to understand what is happening with all sustainable development initiatives, understand the behavior of the markets and apply the required data analytics to enhance the quality constantly through the feedback from the groups of interest.

Integrity

Data about all the projects and activities must be always consistent, providing accurate information and building trust over the life cycle of each implementation. Information quality is as important as the information itself, avoiding any unwanted changes of the data that supports positive climate impact.

Availability

Authorized parties should be able to read and access the needed information at any time and from anywhere around the globe. The technical infrastructure and the display of these information must always be in place so all have the right access to it.







Confidentiality

Confidentiality and privacy measures are designed in such a way that only specific authorized users will have access to the defined information. Data may be categorized according to the amount of it that may be damaged if handled by the wrong hands. Measures should be taken to avoid and secure that all the information is accessed by the identified users.

Carbon unit life - cycle

Carbon units are issued after the implementation of a rigorous process defined by the certification standard. Standards may have deviations between each other, but the general process will be described in this section. It is important for the reader to understand the process, to identify later the definitions from the data model.

Process description

In order to generate a Carbon unit, an initiative must be registered on a public platform and it must follow the process defined by a Carbon Crediting Standard. Normally, the process includes three (3) important steps that are recognized internationally by the ISO 14064 and are described in the picture below.



Figure 1. Carbon Credit Generation Value Chain

Formulation: The formulation phase is included as one of the main stages, so that the project proponent is able to include all the required information to start the process. The certification standard normally assigns the consultation after the formulation stage, or as a requirement to finish this stage. EcoRegistry as a platform is flexible in some definitions according the consultation phase and how it can be defined, but the platform is explicit in always having the grievances





process active so anybody can comment on a project at any time or stage that the project is in. The grievances process will be explained later in this chapter

Validation: During the validation process, the formulated Project Design Document (PDD) is sent to the Validation and Verification Body (VVB) to be reviewed. Important milestones like additionality, base line and the definition of the quantification methodology according to a specific standard are taken into account by the VVB, to approve the formulation of the project in it's validation stage. The supporting documentation of this process needs to be stored on the registry system, to have transparency about where the project comes from and how the quantification will be made. When the documentation is ready for validation, the project representative should sent the project to review and the Validation Body will sign the validation process on the platform.

Verification: During the implementation of the project there has to be an implementation of a Measurement, Report and Verification System (MRV). This MRV system will support the quantification of the emissions reductions/removals that will lead to the certified carbon offsets. All the documentation that is collected as support for the verification stage must be uploaded on the platform, so that the Verification Body may enter and sign the verification stage.

Certification: Once all the stages before the certification are approved, the Certification Standard will enter the platform and review all the supporting documentation and quantification of the emissions reductions/removals. The Certification Standard will have to enter to sign the certification process and define the carbon credits that are generated. All carbon credits must have a unique serial number, that defines the sector, project type, vintage, type of reservoir and other specifications according to each carbon market.

Credits: Once the Certification Standards approves all the procedures, the credits are generated (issued) on our blockchain platform and delivered to the account of the project's representative. The chapter with the title Origination phase will explain in detail the issuance process and how to follow the specified credits that are generated for each project according to the attributes.

Grievances process

As a platform that aims to in improve the quality and integrity in carbon markets, developing the system as a bottom up approach, it is mostly relevant to have a way of connecting all stakeholders in one system. The connection between different stakeholders must be easy and fluent, as well as accessible for all actors in the platform. This is the main reason why all standards that work with EcoRegistry must have a public commenting period according to their definitions as well as a an ever going comment system. When entering a project's website on EcoREgistry, public users will always have the opportunity to comment each project, so that this comments will be taken into







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account during the projects stage. The figure zxxx shows exactly the option to define project comments.



Figure 2. Project comment window

After a user or anyone introduces a comment in the project, an immediate workflow is triggered automatically to start validating the required information. As the Figure 3 shows, the information is shared automatically with the validation and verification body, so they can take these inputs directly during the auditing processes and the certification standard so that the information is taken into account and defined as solved before the issuance of the specific credits.

		Project commen	t	
		Contact information	Project information Program or Standard	
		Names	CERCARBOND	Ÿ
Project comm	nent ->	E-mail	Carbono Paia Pardida	~
1		E-mail	Comment	
		Country	Comment	
		Colombia		
			Drag and drop or <u>browse</u> .	
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			Coordination	n and interaction with the
			project propon	ent to solve any issues that ere addressed



Figure 3. Grievances process workflow

Accounting System

All climate assets that will be issued under the EcoRegistry platform must follow a very specific origination process toa void double counting when issuing the defined carbon credits or any climate asset. After the issuance process, the blockchain based implementation of the data base tracks each one of the credits to avoid double claiming when the end beneficiary is stated. This section will explain the origination phase and the tracking system to clarify to the user how double counting is being handled with the technology in place.

Origination phase (Avoiding double issuance)

The origination phase starts when the project proponents defines the different characteristics of the project. Each project needs to have an expecatation of the amount of climate assets (carbon credits) according to specific attributes like vintage, activity type, sector and so on. In EcoRegistry, the project proponent needs to stablish the data described in Table 2 (Actual data can be always found under <u>www.ecoregistry.io</u>), and this data will be used to form each one of the serial numbers that the climate assets will have. This input by the user will be used to generate the defined amount of climate assets (carbon credits) that will be issued according to the program definitions from the certification standard.

Parameter	Description
Certification Standard	The platform has been designed to support multiple standards, and the user needs to select which certification standard they are applying to. When EcoRegistry is implemented as a "white-label", the standard is selected automatically.
Project ID	Identification number defined by the platform.
Validation Body	The validation body that the project proponent selects for that specific accreditation period.
Quantification methodology	According to the sector, there are different methodologies that can be selected, and this attribute needs to be specified for each issuance block.
Verification Body	The verification body that the project proponent selects for that specific verification.
Sector	One of the 15 sectors defined by the UNFCCC for the CDM projects.
Mitigation activity	Depending on the sector and quantification methodology, projects can implement different activities that refer to removal, reduction, efficiency, and so on.
REDD+ activity	There are specific activities for REDD+ projects
Reservoir type	There are different types of CO2 reservoirs, according to the activity and type of implementation of the project.



Country	Host country for that specific project.
Validation number	Accreditation period that the project is currently in.
Verification number	Verification period that the project is currently in.
Year	Vintage of the specific credits
	Table 2. Project parameters

The definition of these data is done by the user through the platform, to avoid discrepancies between email exchanges, validation and verification reports and also to clarify the expected amount of credits that are expected per block. The Figure 1shows the entry for the user on the platform for the credits according to some of the parameters that. The expected removals/reductions need to be specified according to each one of the selected parameters above. As you can see in the figure, the user needs to specify the values of removals/reductions according to each one of the attributes per vintage, and this information will be stored in the data base to compare it with the data acknowledge by the validation and verification bodies through their auditing processes.

Sector - Quantification Me	ethodology										
Land use, land-use char	nge, and forestry (LULUCF)	- M/UT-REDD+: N	/lethodology	For the Implement	ation of REDD+ Pr	ojects Consistent v	with National Refere	ence Levels 🛛 👻			
Mitigation activities			Reservoir type				REDD+ Activi				
R1-GHG removal			A-Biomass above ground				3-Increased forest carbon				
ndividual buffer (tCO2e)		r (tCO2e) Net (tCO2e) 🕐			0		Year	Year			
								2022		~	Add
Sector	Quantification Methodol	ogy		Mitigation activities	Reservoir type	REDD+ Activity	Individual buffer (tCO2e)	Collective buffer (tCO2e)	Net (tCO2e)	Year	
Land use, land-use change, and forestry (LULUCF)	M/UT-REDD+: Methodology For the Implementation of REDD+ Projects Consistent with National Reference Levels		R1-GHG removal	A-Biomass above ground	3-Increased forest carbon	100.000	100.000	1.000.000	2021	Delete	
Land use, land-use change, and forestry (LULUCF)	M/UT-REDD+: Methodolog Projects Consistent with Na	y For the Implementat tional Reference Level	ion of REDD+	R1-GHG removal	A-Biomass above ground	3-Increased forest carbon	100.000	100.000	1.000.000	2022	Delet



After all this information is gathered through the platform, the user will send the project for the review, and the validation body, the verification body will have the opportunity to correct and view the exact data according to the expected values. The validation report and the verification report can be compared with the data stored in the data base and the auditing body can request the correction or approve the specific values. In the Figure 8 the approval window for the Validation and Verification bodies is shown, and the approval window for the certification body is very similar. In this window, the actor on the platform needs to stablish the specific data, review it and upload the supporting documentation for the evaluation process. This window makes the interaction independent from each actor. Other than that, it is to recognize that the platform requests a second authentication factor to identify the person that is doing this specific procedure.





Confirmation

A Code has b and enter the	een generated, which was Code to confirm the tran	sent by SMS t stor HERE, rear	o your cellphone num nd code • E-mail.	nber or to	the e-mail register	ed on the platfo	orm. Please che	ck your ir	box or spam	
Crediting	period									
Start date			-	End	date 5.05.0003				-	
06/06/2021					06/06/2023					
Expected (tCC	D ₂ e)	Individual buffer (tCD ₂ e)								
2.000.000			0							
Collective but	ffer (tCO ₂ e)			Net (tCO ₂ e)						
0				2	000.000					
Sector - Quar	ntification Methodology									
Energy ind	ustries - ACM0002: Grid-o	onnected elect	ricity generation from	n renewab	le sources		~			
Mitigation ad	tivities		Reservoir type			REDD + Acti	vity			
XX-NA		\sim	X-NA.		~	X-NA			~	
ndividual but	ffer (tCD.e)	Collective but	fer (tCDve)	Net	(100.4)		Vear			
					(2021	~		
Add										
					Individual	Collective				
Sector	Quantification Methodology	Mitigation	Reservoir type	REDD+ Activit	buffer y (tCO:e)	buffer (tCOse)	Net (tCOse)	Year		
Energy industries	ACM0002: Grid- connected electricity generation from renewable sources	R5- Renewable energy	B- Underground biomass	X-NA	D	0	500.000	2021	Delete	
Energy industries	ACM0002: Grid- connected electricity generation from renewable sources	R5- Renewable energy	B- Underground biomass	X-NA	D	0	1.000.000	2022	Delete	
Energy industries	ACM0002: Grid- connected electricity generation from renewable sources	R5- Renewable energy	B- Underground biomass	X-NA	D	0	500.000	2023	Doloto	
t fan MM	2 22. 3 25000 4 2 			8 =					•	
×≕ •										
			Varification	n staterne	nt (PDF)					
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1. Cc	ide generated, please che	ck your e-mail	inbox, spam or SMS							
								_		
								Cancel	Accept	

Figure 5. VVB input example

After accepting the step, the specific amount of credits is stored in the data base and the user that approved and signed this specific step is also stored to follow and track how the credits are generated. During the final step, the issuance step, that is performed by the certification body, the platform awaits that the information has been specified according to the documentation and





validates that it is equal in the previous steps. All the supporting evidence will be analyzed to define the specific amount for each block, and the pdf that is generated by the certification body must have the exact same values as the platform. At the end, the final information can be accessed always in the public part of the platform, where anybody can download the issuance certificate and can access the website from each project and compare the issuance and the accounting of the carbon credits. An example of a real project is shown on the figure below.

The example from Figure 6 is project with the ID number 92 and can be accessed though the website: <u>https://www.ecoregistry.io/projects/92</u>. The project view in EcoRegistry has three (3) different tabs, one with the general view, one with the technical data and the last one with the carbon credits. The documentation that supports each issuance can be found under the technical data and in this page the user will be able to find the issuance certificate. The issuance certificate can be compared with the carbon credits tab, where the accounting system is displayed for everyone to understand. As you can see in the figure, the values that are issued are the same that are accounted in the platform, according to the specified attributes of the project.



Figure 6. Project example for carbon credits origination

As mentioned before, during the verification and issuance process, all the attributes of each carbon unit are defined by the project proponent and reviewed by the verification body as well as the issuance body (Standard). The information is gathered through the process described in previous sections and the final result is the automatic generation of the carbon credits. Each project page on EcoRegistry allows the users to access the *"carbon credits"* tab to get an overview of the units that were issued for that specific project. Figure 7 shows the serial numbers and the table with all the attributes in the porject's page.









Credits Tracking System (Avoiding double claiming)

Once the carbon offsets are certified by the Certification Standard, the carbon credits are generated (issued) and delivered into the account of the project's representative. The issuance of the credits accounts for the exact quantity that is recognized by the specific verification. The first credit holder is the project representative, and he/she will have the following three options:







Figure 8. Carbon Credit custody on EcoRegistry

As the Figure 8 above describes, there are different actions that users are allowed in EcoRegistry:

- 1. Transfer inside EcoRegistry: Transferring credits means that you can transfer a specific amount of credits from an Account in EcoRegistry to another account at EcoRegistry. This transaction history is tracked and stored on our blockchain platform.
- 2. Retire: When the end user of the credits is recognized, the final user can be defined as well as the purpose for using them. This step must always be done on EcoRegistry, and even when the credits are available for selling on another platform, the credits must return to EcoRegistry for the retirement procedure. A credit that is generated by EcoRegistry can only be retired on EcoRegistry, avoiding double claiming issues.
- **3. Connection to external platform:** EcoRegistry offers the opportunity to it's customers to connect to different platforms. The connection to other platforms helps the project owners and project developers find the best option available to sell de credits. The full description of the external connections is explained in another document that can be found on the following link: <u>https://www.ecoregistry.io/documents</u>.

Double claiming issues are very important for the accounting system of the corporate GHG, country's GHG accounting system and others. For this reason, EcoRegistry has implemented a systema that only allows one end beneficiary to receive the climate assets and this end beneficiary is the only one that may claim the environmental benefits intrinsic with the retirement certificate. In order to achieve this, EcoRegistry has implemented a blockchain based data base that tracks every single transaction of the climate assets, and the for the end beneficiary to receive a retirement certificate, the credits MUST return to the platform and the retirement must be effective on the system.





Other than that, the retirements that are performed on the platform have the following specific characteristics that can not be copied by any other system:

- 1. The pdf itself has a QR code that always will bring the user to the retirements of the specific project and the information of the retirement should be public on our website.
- 2. All retirements are public on our website and the information can be accessed from the public domain, and the retirement certificate is always downloadable.
- 3. The retirement certificate includes de retirement purpose (Any carbon Tax, Voluntary Carbon Market, CORSIA, etc...), the end beneficiary, and the country.
- 4. If the end beneficiary has a different country than the host country of the project, the system will ask for the specific corresponding adjustment documentation.
- 5. The accounting system is updated in real time and the system has always all the information required to count for the specific values.









Figure 9. Retirement certificate

According to the described information above, a retirement certificate is generated automatically to specify the end beneficiary and the purpose of use for the credits. As the example from

Figure 9 clarifies, all the information required for the retirement is included in a file with pdf extension and is stored on EcoRegistry's database to support the retirement. While the retirement certificate is generated, the accounting systems "burns" the available credits to a system burn address, where the credits can not be taken back from. This implementation assures that not even the administrator of the system can take the credits out of the retirement state, but everybody can read what credits are already retired. The system itself avoids double claiming issues with this implementation.

Finally it is important to recognize that the last part of the serial, the specific number of each credit is given at the retirement process, to avoid double counting, and to specifically manage the availability of credits according to the best practices. The definition of the serial numbers and how they are built can be found in the Serialization chapter.





The retirement certificate is stored on the platform as part of the accounting system for the project. The hierarchy allows the user to identify the accounting for each project, and EcoRegistry also provides general information about all the retirements. To understand the accounting system for each project, the user must access the project's page and look for the tab called "carbon credits". The project accounting in **jError! No se encuentra el origen de la referencia.** shows how a public user can follow all the issued and retired credits, as well as recognize the information for





each retirement. The information can be accessed on the table below in the image, or also by downloading the retirement certificate with the defined icon.

Serialization

As mentioned during in this document, the serialization of each climate asset is very important to have a clear overview of the accounting process. Avoiding double counting during issuance or claiming processes is very important to maintain the integrity of the market. This section will explain how the serialization process is implemented on EcoRegistry.

Each climate asset on EcoRegistry will have a unique serial number that identifies where the credit comes from. This information is gathered through the processes described in the Carbon unit life - cycle section, and included in the generation of each serial. The required data for the serialization is updated in <u>https://www.ecoregistry.io/</u> and the following table shows the expected values.

Parameter	Description
Certification Standard	The platform has been designed to support multiple standards, and the user needs to select which certification standard they are applying to. When EcoRegistry is implemented as a "white-label", the standard is selected automatically.
Project ID	Identification number defined by the platform.
Validation Body	The validation body that the project proponent selects for that specific accreditation period.
Quantification methodology	According to the sector, there are different methodologies that can be selected, and this attribute needs to be specified for each issuance block.
Verification Body	The verification body that the project proponent selects for that specific verification.
Sector	One of the 15 sectors defined by the UNFCCC for the CDM projects.
Mitigation activity	Depending on the sector and quantification methodology, projects can implement different activities that refer to removal, reduction, efficiency, and so on.
REDD+ activity	There are specific activities for REDD+ projects
Reservoir type	There are different types of CO2 reservoirs, according to the activity and type of implementation of the project.
Country	Host country for that specific project.
Validation number	Accreditation period that the project is currently in.
Verification number	Verification period that the project is currently in.
Year	Vintage of the specific credits
Unit	Specific unit that is retired

Figure 11. Serialization table





To understand the management system for the serial number, it must be understood that EcoRegistry manages a block of credits that are recognized with the same attributes and that corresponds to a specific root serial. The root serial comprehends all the values according to each specific issuance until the year (vintage). This block of credits can be transferred or blocked, but the specific unit number is assigned in order at the retirement moment. One retirement certificate contains the information of the serial first unit with its serial number until the last unit that was retired. The specific serialization for each unit can be visualized in the following figures.



Figure 12. Serialization

The Figure 12 shows the serialization for one climate assets, according to the definition and specific attributes. This specific serialization can also be modified to include some data that can be important to track units that have the same attributes but need to have an independent indicator. A good example for these kinds of units may be the units that are part of a reserve for AFOLU projects and serve as a buffer to the project and the standard. This final figure shows how such an indicator can be included in the serial number as well.





Collective buffer serial



Figure 13. Buffer serialization



