



WEBINAR

ASCENT Energy and Carbon DMRV



Achieving Results Faster, Together

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Outline

Opening – 5 minutes

1. National Digital MRV Systems (Energy Access) – 25 min

- Opportunity to capitalize on an existing trend
- Value proposition of digital MRV
- ASCENT digital MRV architecture
- Q&A: 5 min

2. Digital MRV for Carbon Markets – 35 min

- What: Carbon protocol, carbon engine, and methodology
- Why: Reduce time and cost, enable monetization
- Demo: Carbon Engine walkthrough (10 min)
- Q&A: 5–7 min

3. Interface with Standard – 5 min

- Overview of the Global Carbon Council (GCC) portal (high-level)
- Q&A: 2–3 min

4. Country Readiness & Next Steps – 15 min

- Steps for countries for adoption
- Next steps



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1. National Digital MRV Systems (Energy Access)



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Opportunity to leverage digital infrastructure for DMRV

Capitalizing on an existing trend



Digitalization of the energy sector



Increased connectivity



Increased financial inclusion

Example: Digitalized Grids and Mini-Grids



Infrastructure performance

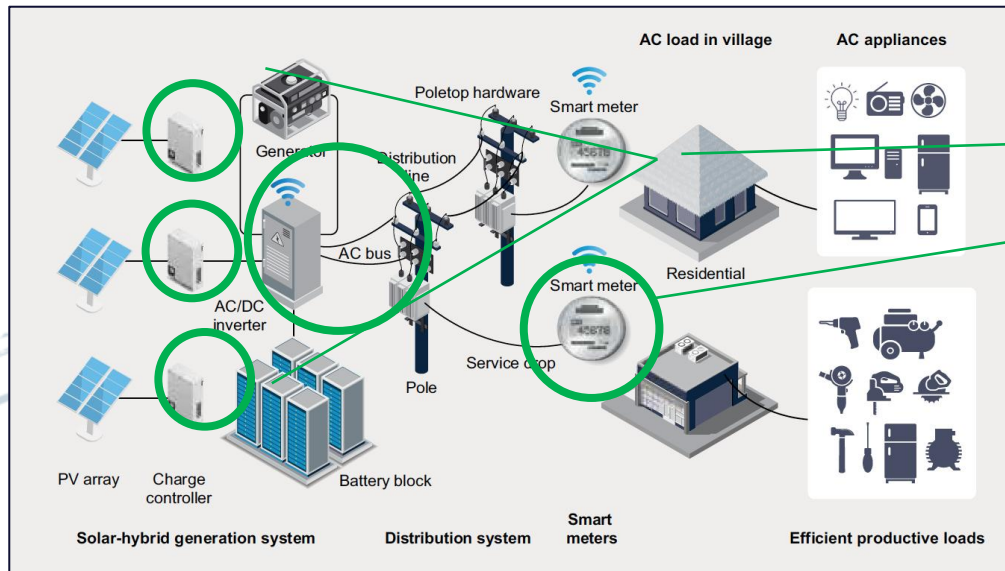
- Reliability of service
- Total consumption/production
- Total capacity vs. load



Consumer behavior

- Energy consumed
- Individual load

Comprehensive datasets at the asset and system levels



Realtime data from smart meters, charge controllers and PV inverters track and log energy consumption/ generation data.



Digital platform to aggregate, visualize, monitor and report on data.



Digital MRV overcomes key challenges in MRV process

Data & reporting challenges

 **Manual, slow** data collection
(paper surveys, spreadsheets)

 Data gaps, **inconsistent** reporting
across sites

 **Poor data quality** and limited
real-time visibility

Integrity & verification challenges

Fraud risks (ghost customers, inflated
installations)

Limited audit trail and traceability of
evidence

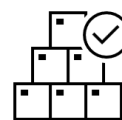
Weak linkage between customer, device,
and payment evidence

Scale & finance challenges

High transaction and
verification **costs due to
timing**

Difficulty aggregating
thousands of units/projects

Delayed carbon credit
issuance and long verification
cycles

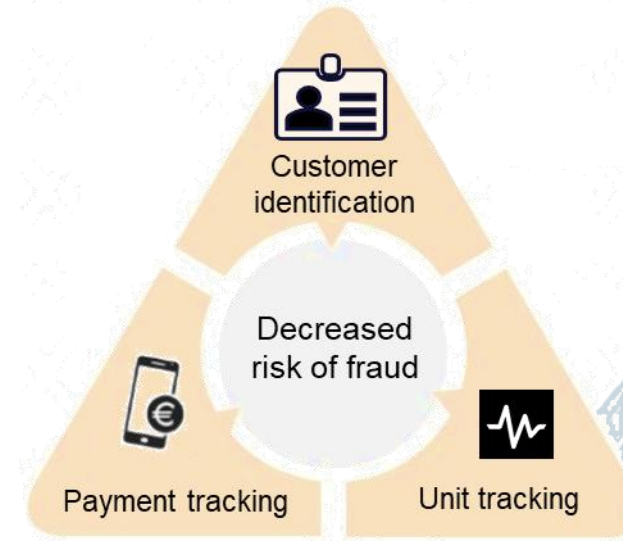
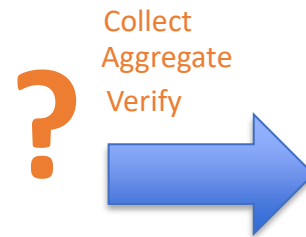




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Digital MRV is a key enabler for Country Program Implementation

Complexity of energy-access-related MRV



dMRV can triangulate several data sources

Main dMRV functionalities

Features



DATA COLLECTION & STORAGE

- Structured collection of real-time data on energy access through automatized ingestion in a single database
- Secured storage
- Traceability of changes



DATA PROCESSING & ANALYTICS

- Automatized data validation/eligibility checks
- Verification processes
- Tailored reporting & visualization



DATA SHARING

- Differentiated user rights
- Facilitates contract management, regulatory oversight, energy planning updates, and/or carbon credit issuance and monetisation

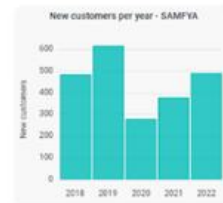
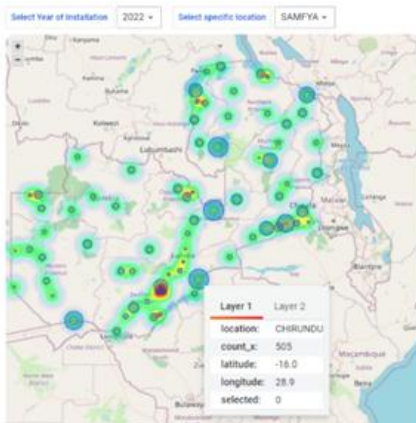
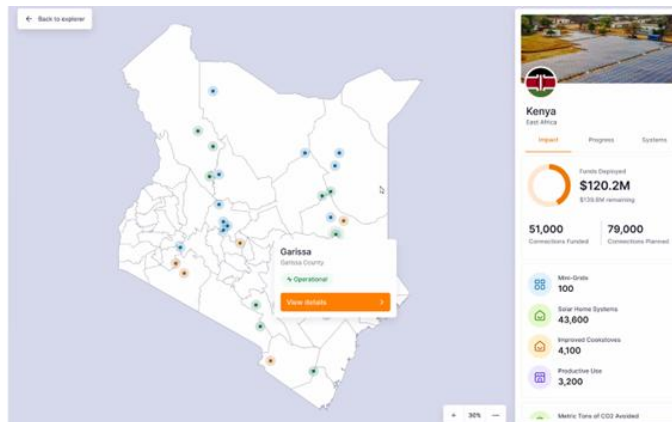


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Examples of dMRV providers which can “hit the Ground running”

- Purpose-built for the energy access sector
- Visualizations and analytics tailored to program-specific needs, e.g.

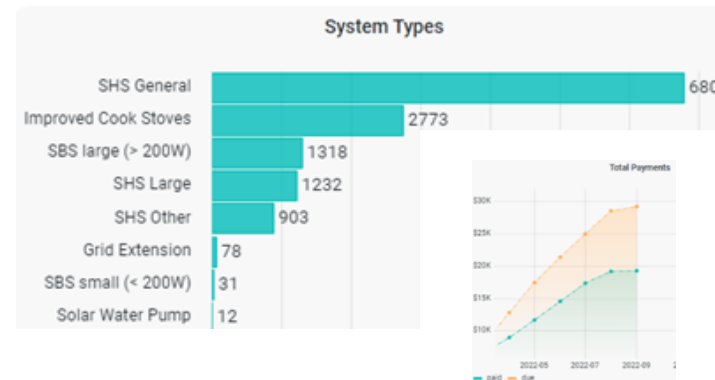
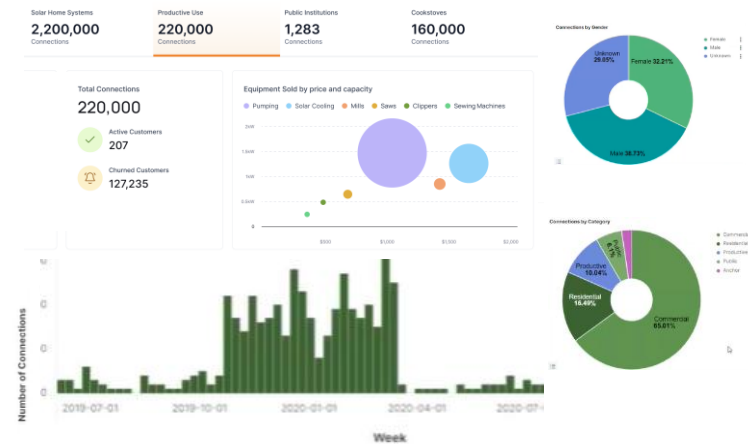
Country level



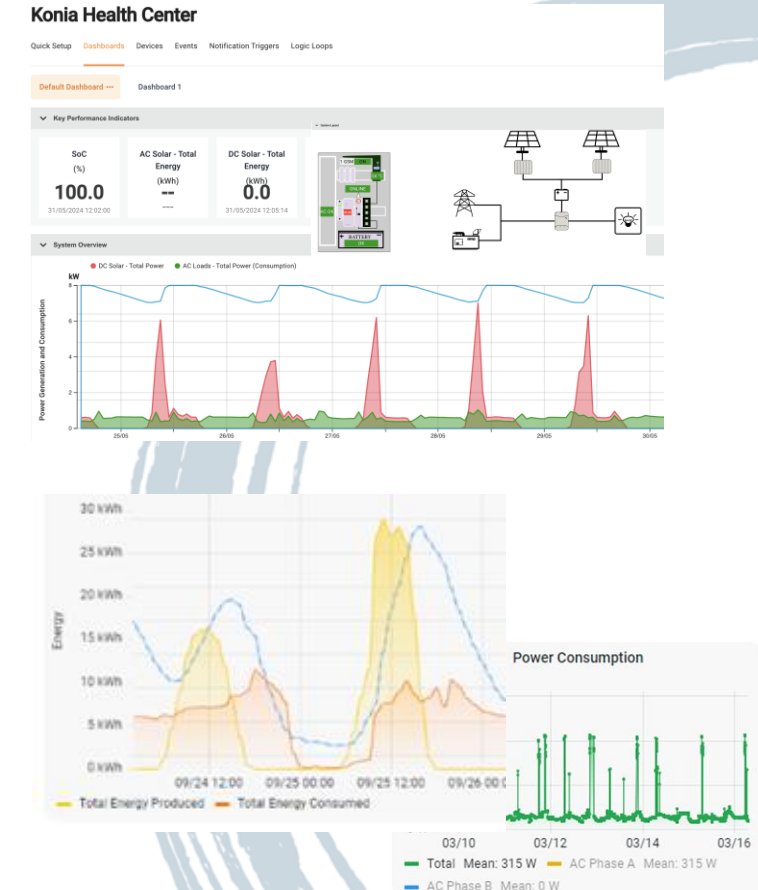
New customers per city - 2022

Location	Count
CHADIZA	339
CHANA	67
CHAVUNA	38
CHIBONDO	159
CHENGI	79

Portfolio/program level



Asset level



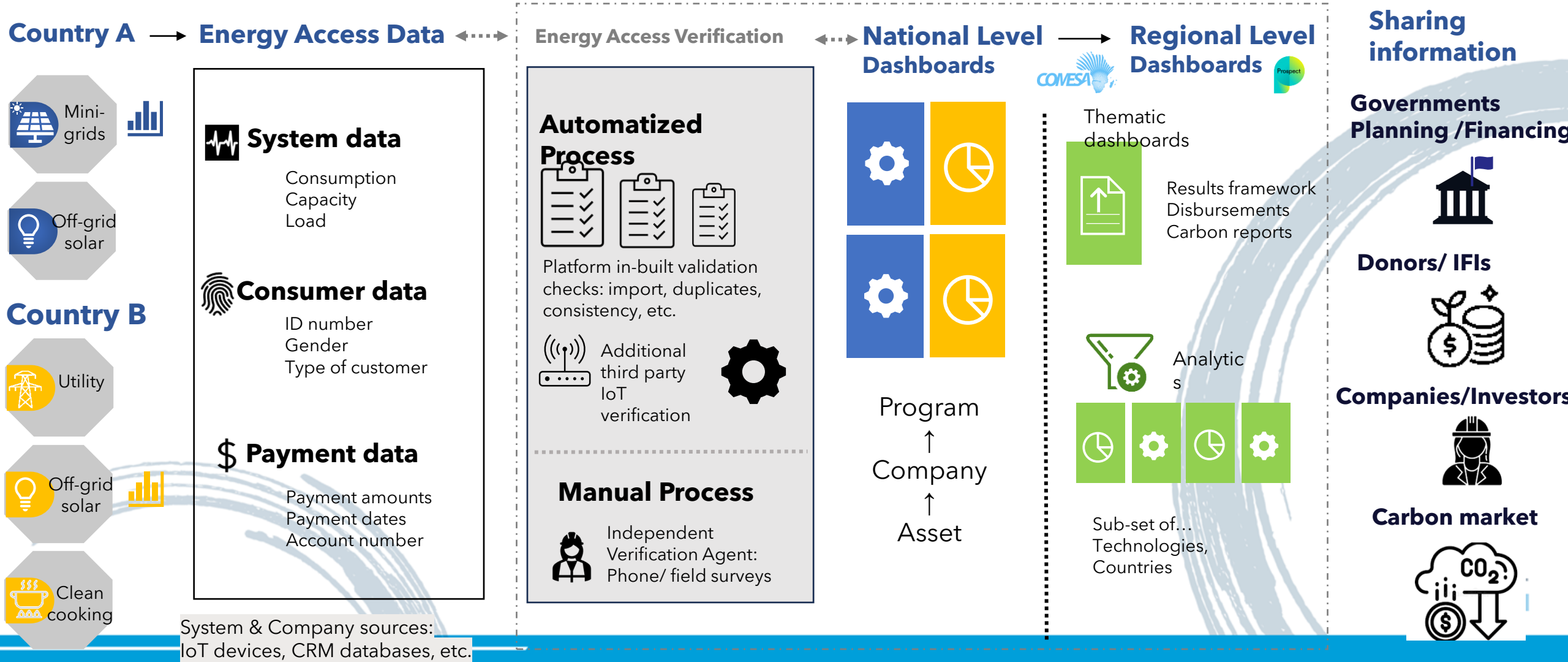


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Building data bridges: Local – National – Regional - Global

1 Data sources from energy projects Data collection

2 National and regional MRV Data aggregation

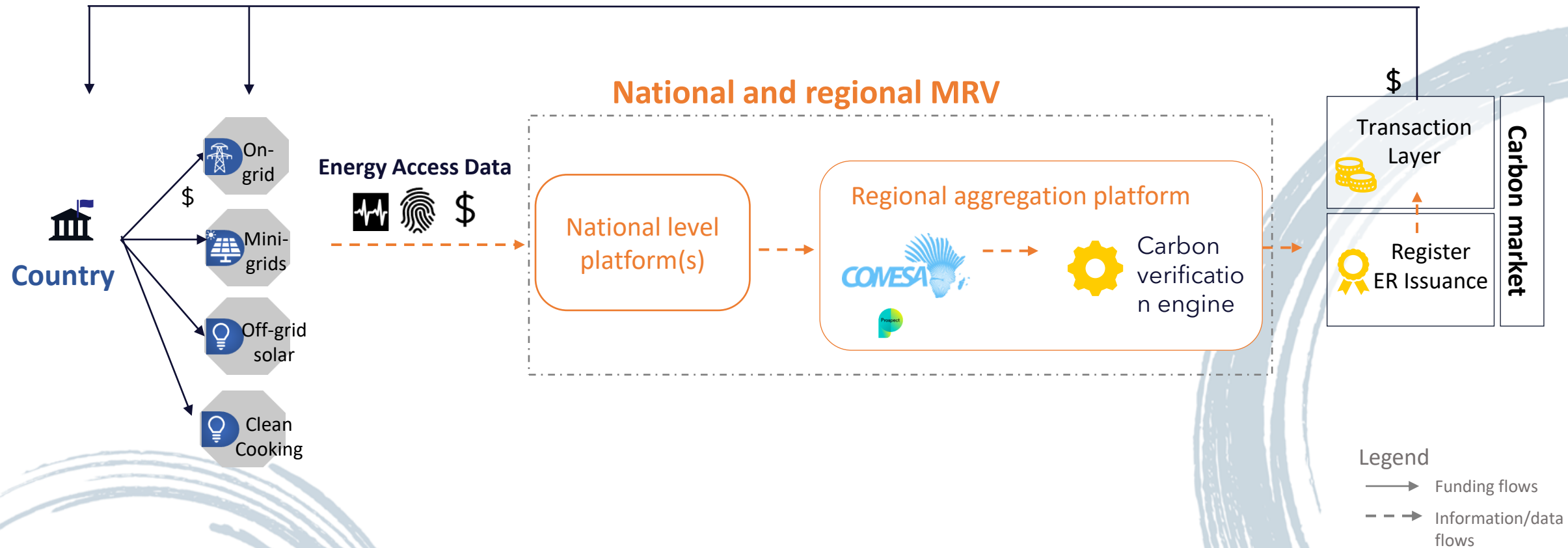




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Building on dMRV for Accessing Carbon Markets

Reducing transaction costs, improving efficiency, attracting interest





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2. Digital MRV for Carbon Markets

Monitoring, Reporting, and Verification (MRV) systems are a key tool used to track Greenhouse Gas (GHG) emission reductions



M

=

Monitoring: Collects project performance data (activity data, fuel use, energy output, land-use change, etc.)



R

=

Reporting: Translates monitored data into emission reductions/removals using an approved methodology and baseline scenario



V

=

Verification: Independent third-party checks data, calculations, and safeguards evidence before approval

- Backbone of carbon credit **integrity**
- Formal requirement for international carbon trading under **Article 6, Paris Agreement**
- Builds **trust** in carbon credits by ensuring results are measurable, auditable, and aligned with global climate accounting rules.

Digital MRV systems can help enhance the MRV process for emission reductions

In a conventional MRV system, project data is often recorded **manually and stored as a hard copy or in an excel worksheet**. This is both difficult to analyze for reporting purposes and **costly to verify**.

D-MRV systems use emerging digital technologies such as smart meters, remote, sensors, and even satellite data to digitally report, record, and analyze project information. This increases the reporting accuracy, reduces the time required for data collection, and lowers the cost of 3rd party verification of the project's performance.

D-MRV systems are a key component in future climate markets to ensure robustness and the smooth functioning of those markets.

Component	MRV	D-MRV
Real-Time Data Collection	✗	✓
Automated Data Analysis	✗	✓
Continuous Flagging of Outlying Data	✗	✓
Standardized Reporting Format	✗	✓
One-Off MRV Verification	✗	✓

ASCENT DMRV: Converting energy access activity data into verified emission reductions

Project implementation activities



ASCENT D-MRV SYSTEM

Energy access
data

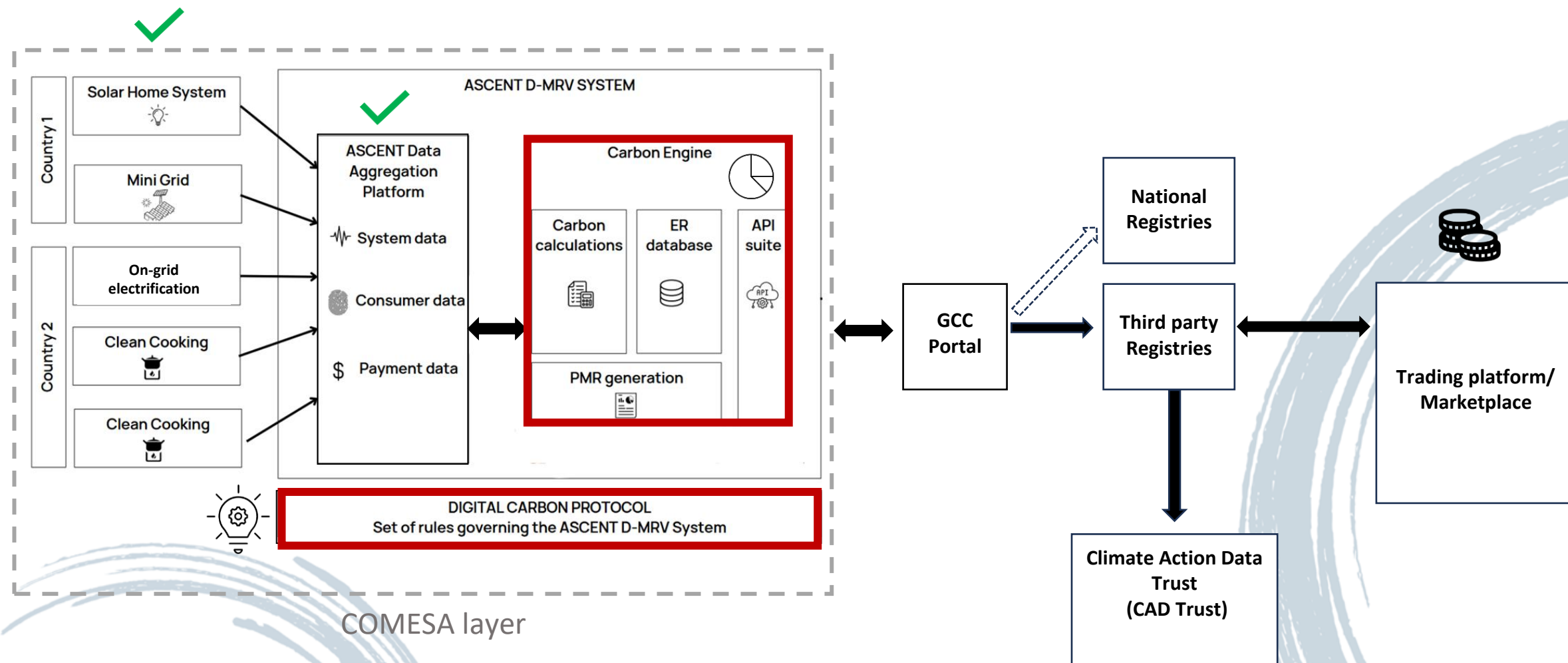


Carbon
Verification
Engine

Carbon crediting



A close look at ASCENT Carbon dMRV Architecture



Carbon Protocol

A standardized set of rules, parameters, and calculation methods that converts energy access activity data into verified and auditable carbon emission reductions for credit issuance.

1. Common parameters

- Unique identifiers for installations and users ensure data lineage and integration.
- *Examples:* Installation ID, User ID, GPS coordinates.

2. Metering parameters

- Real-time data capture for direct emissions tracking.
- *Examples:* Energy consumption load, solar irradiance, diesel usage.

3. Proxy parameters

- Estimates energy usage when direct measurements are not feasible.
- *Examples:* Battery capacity, daily allotted watt-hours, payment-linked energy consumption.

- Energy-to-Carbon Computations

- **Direct measurements:** Converts real-time energy data into emissions reductions using predefined factors.
- **Proxy-based estimates:** Utilizes payment data or usage intervals to calculate emissions in off-grid or low-resource settings.

- Payments-to-Energy Computations

- **Pre-computed intervals:** Maps payment events to energy usage intervals.
- **Dynamic calculations:** Adapts energy usage estimates based on payment frequency and device configuration.

How do we execute the Carbon Protocol?

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Carbon Engine: The digital backbone of protocol execution

The **Carbon Engine** is a software that will automate data collection, processing, and carbon credit generation, enabling scalable, transparent dMRV systems for carbon markets. It will be embedded within **Prospect's dMRV platform** and the **Global Carbon Council (GCC) MRV portal**.

-  **Data integration & processing**
 - Consolidate inputs from IoT devices, satellite imagery, and payment systems
 - Process real-time and proxy-based energy data with high accuracy
-  **Standardized carbon computations**
 - Translate energy data into verified carbon emission reductions
 - Apply international emissions factors for credibility and comparability
-  **Automation of carbon credit generation**
 - Streamline the generation and verification process
 - Minimize manual steps to improve scalability and efficiency



Live
demo
today!

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A modular, configurable architecture

Limitations	Mitigation/Future action
 Variable availability and quality of technology-generated data (e.g., sensors, devices, IoT, mobile inputs), depending on context, connectivity, and supplier maturity	Establish data quality assurance (QA/QC) protocols, minimum performance thresholds, and fallback rules (manual inputs, proxy datasets).
 Uneven digital capacity across local firms and implementing partners, requiring solutions that range from low-tech to fully digital (e.g. clean cooking)	Apply an inclusive implementation pathway, enabling participation through digitized, semi-digital, hybrid, and fully digital workflows.
 Limited field deployment and real-world validation, meaning system performance may differ between design assumptions and operational realities	Conduct iterative pilots with ASCENT partners to validate usability, operational feasibility, and costs.
 Potential delays in full DMRV implementation due to unclear expectations on acceptable data processing, auditability, and verification standards	Advance standardization and methodology finalization, including clear guidance on acceptable data processing, transparency requirements, and audit trails.



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Technical demonstration

Carbon Engine



<https://carbonengine.replit.app/>



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CARBON CERTIFICATE for 1 ton CO₂e



Prospect



CarbonClear

Verified through the **ASCENT Carbon Engine**,
using energy access data from **Prospect**, the dMRV platform
developed by **A2EI** and used by the **ASCENT Program** as
Regional Platform for Digital Energy Access Monitoring

This certifies that **1 ton of CO₂e**
has been **reduced by an energy system**
digitally verified through the **ASCENT Carbon Engine**
and tracked in **Prospect**

Please scan the following QR code for details regarding the carbon reduction:



Scan the QR code to see a sample ASCENT carbon credit certificate



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3. Interface with Standards and Registries

DRIVING CLIMATE ACTIONS



Global Carbon Council (GCC)

Energy Access Program Portal (EAPP)

Conventional Process



End of pipeline audit



Sample audit leaving room for uncertainty



Skill dependent



Time consuming



Cost of registration and verification is high



Uncertainties in timelines wrt. Outcomes



Lack of transparency on project performance



Bulk issuance resulting in oversupply

DMRV Enabled Process



Each data goes through QA/QC process



Automated process excluding human intervention and competence requirements



Modular approach, new and improved means can be added



Faster process due to digital pathways

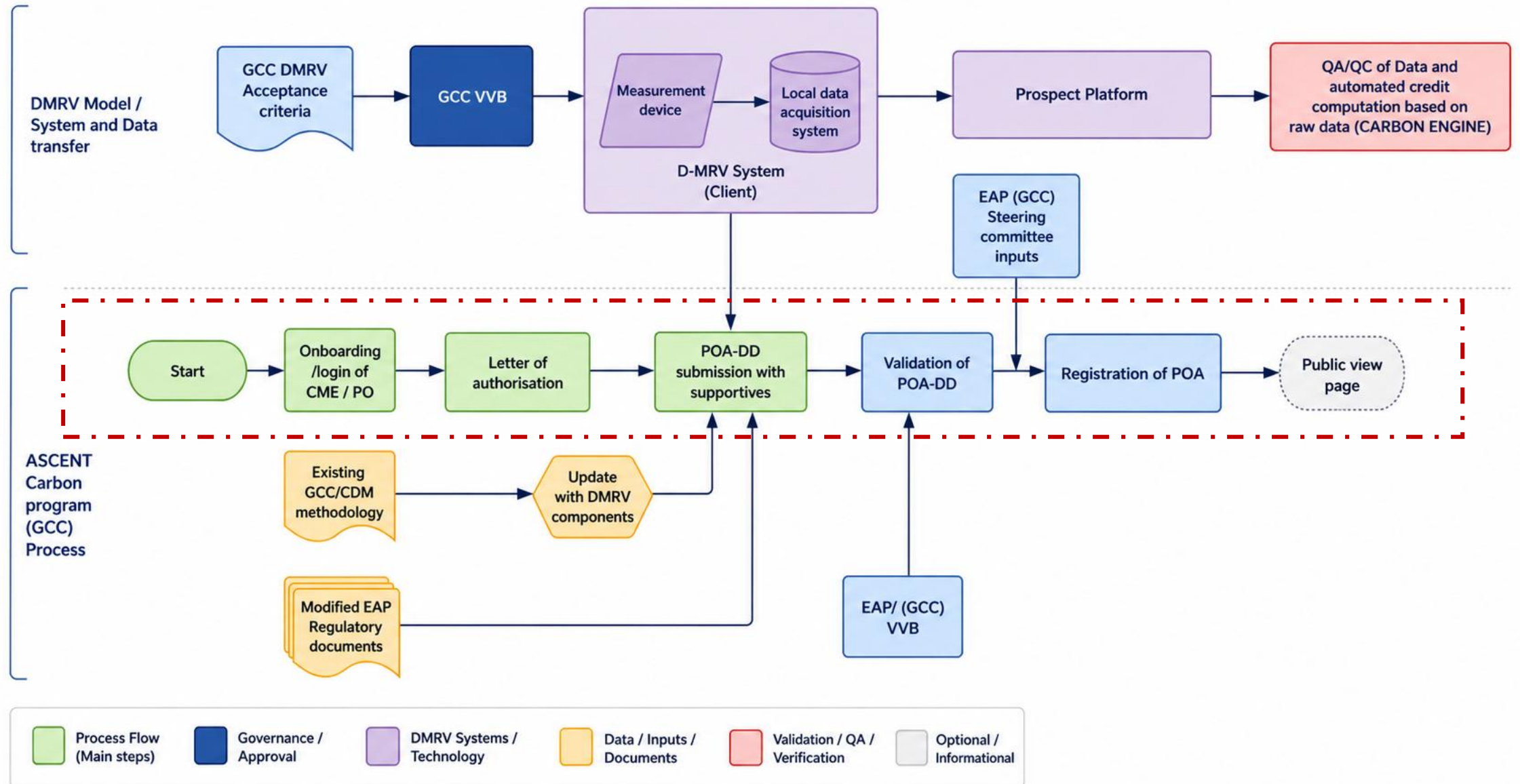


Traceability of data, available for stakeholders for review.

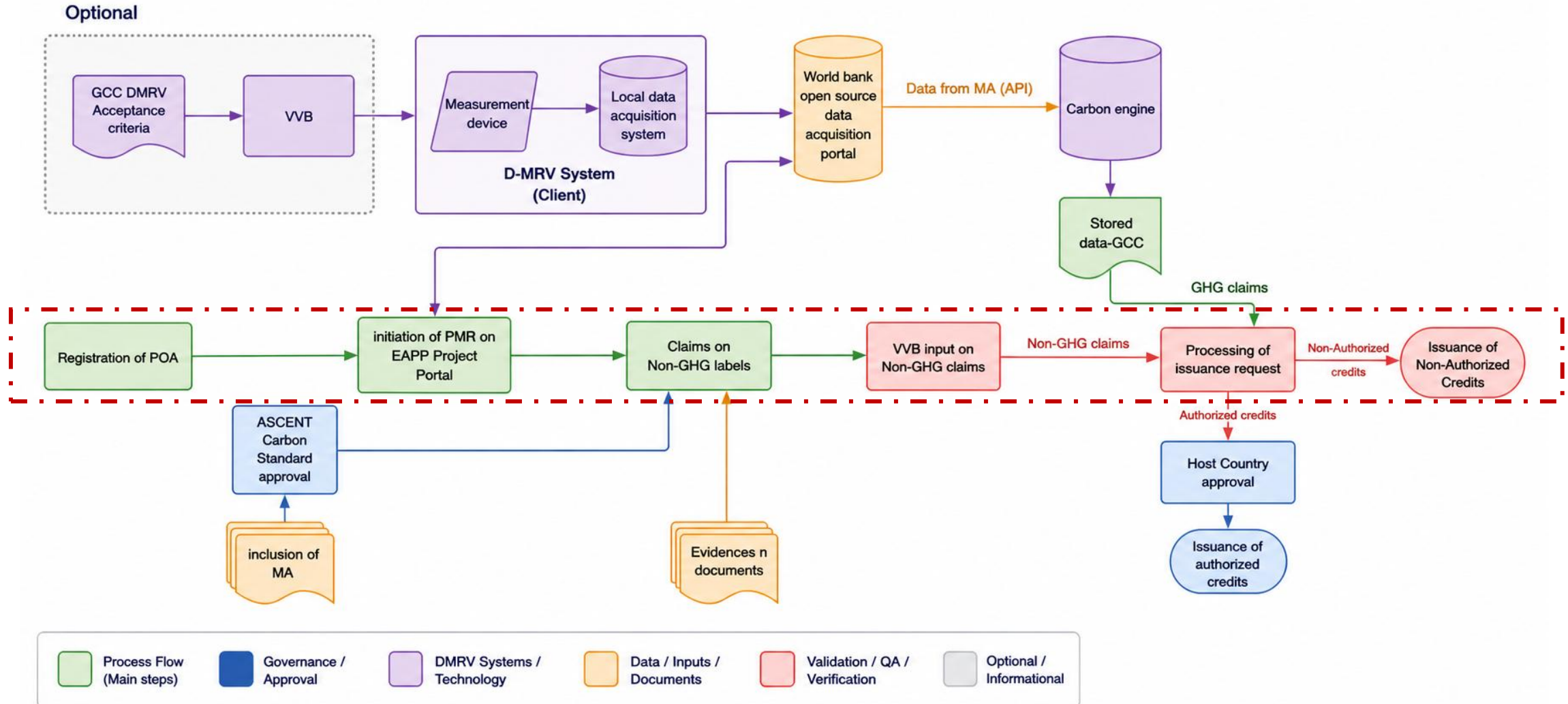


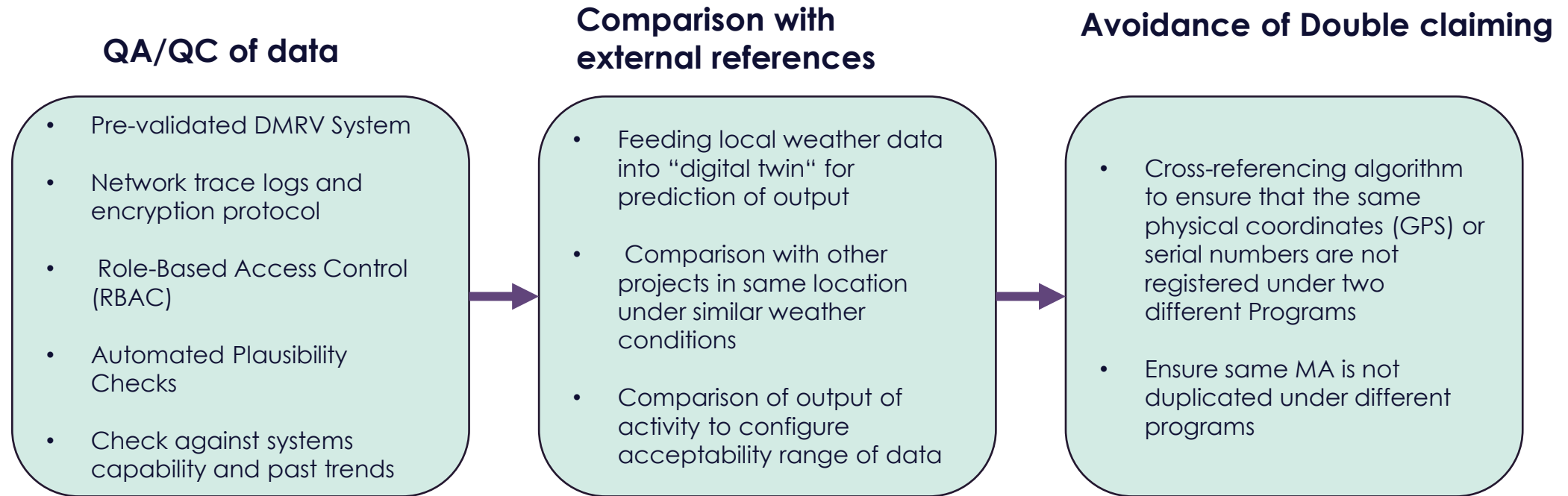
Issuance is driven by market requirements wrt. Volumes and attributes

ASCENT Registration Process



ASCENT Issuance Process





Snapshot of the EAPP

200

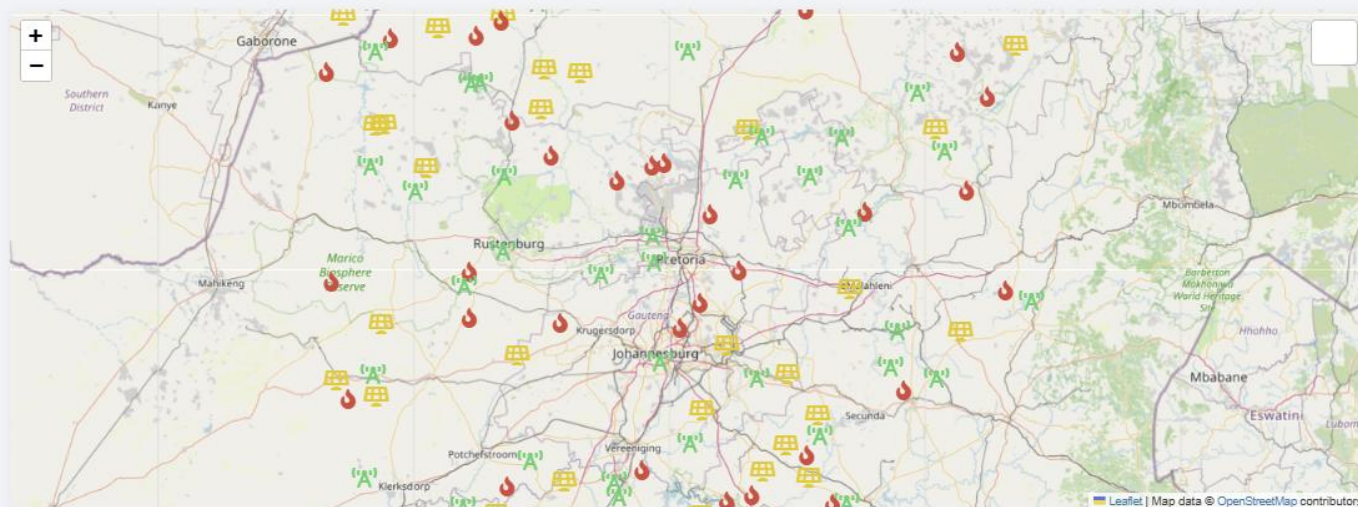
Total Installations

69682 kWh

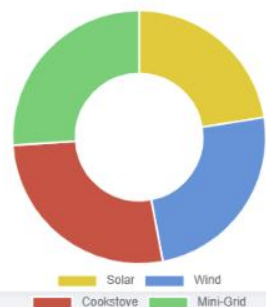
Daily Power Generation

3.536 tCO₂e

Daily Carbon Credits



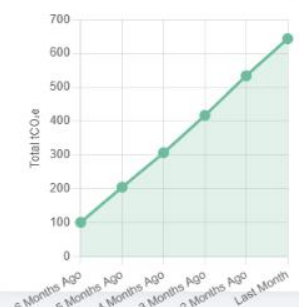
Intervention Type Breakdown



Daily Power Generation (kWh)



Monthly Carbon Credits (tCO₂e)



Intervention Analysis & Strategy

Select an intervention type to generate a strategic report (recommendations and regional risks) powered by Gemini.

Solar

Wind

Cookstove

Mini-Grid

Click a button above to run the analysis...



Modular Structure – Super admin Login

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Dashboard

Prior Consideration Forms

PCF (Archived)

Registration

Registration (Archived)

Issuance

PRC

HCA

VVBs

Verifiers Assessment

Experts

Expert Assessments

Steering Committee

Notifications

MA Inclusions

FORMS

Form Templates

Submitted Forms

Pages / Registration

Registration

POA (Program Of Activities)

Select Status

Select Status

PCN	Submission Number
PCN004005	-
PCN004039	-
PCN004021	-
PCN004026	S002024
PCN004038	-
PCN004025	-
PCN004036	-
PCN004035	-
PCN004033	-
PCN004032	-

MA Inclusions

FORMS

Form Templates

Submitted Forms

SETTINGS

Methodologies

Standardized BaseLines

Tools

Deductions Labels

Duration Master

Sectorial Scope

Project Kinds

Project Track Type

Document Tag

Intervention Type

Intervention Sub Type

Inclusion Criteria

Field Permissions

Email Templates

Profile

Users

Roles

Audit Trail

POA (Program Of Activities)

Select Status

Select Status

PCN	Submission Number
PCN004005	-
PCN004039	-
PCN004021	-
PCN004026	S002024
PCN004038	-
PCN004025	-
PCN004036	-
PCN004035	-
PCN004033	-
PCN004032	-
Not Assigned	-
PCN004023	-
Not Assigned	-
PCN004031	S002021

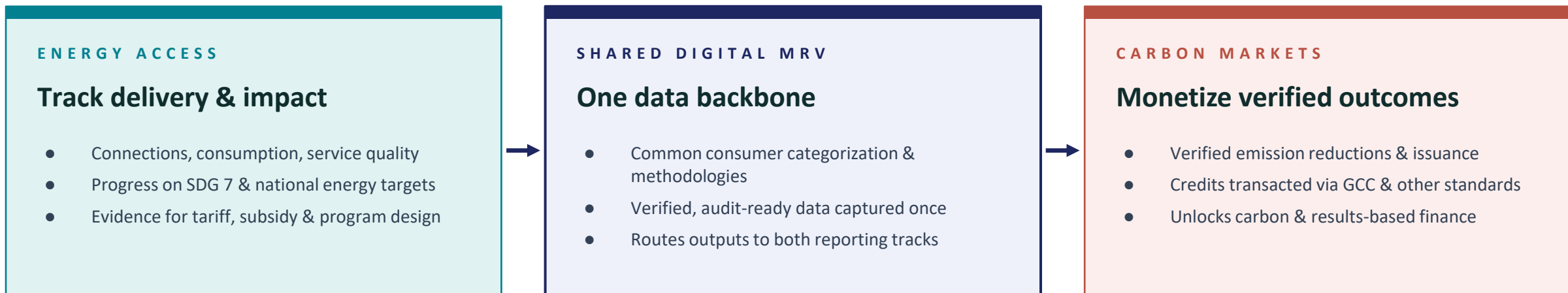


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4. Country Readiness, Adoption & Next Steps

Energy access & carbon markets — one system, two outcomes

Build the digital MRV once. Deliver value on both sides.



Next steps — building once, delivering twice



Key takeaway: *the same kilowatt-hour delivered is both an energy access milestone and a verified emission reduction. Build the MRV once, deliver value twice.*

A) Country adoption process — from preparation to independent operation

A five-step pathway with COMESA & WB ASCENT support along the way

1

Preparation

- Clarify where dMRV fits within the broader ecosystem
- Define stakeholders and scope (platform setup & long-term operation)
- Clarify national regulation on protection of personal data
- Introduce reporting requirements in contracts with stakeholders

COMESA & WB ASCENT team can support PIUs on these early-stage activities

2

Procurement

- Decide on procurement approach
- Adapt ToR (both setup and long-term operation)
- Launch procurement for long-term operation only
- Select national dMRV platform provider and sign national contract

Involve a procurement specialist early. For technical questions, contact the WB ASCENT team

3

Request COMESA support for platform setup (optional)

- Share ToR and formal request with COMESA
- COMESA activates own service contract with selected dMRV provider for platform setup

4

Setup of national dMRV platform by selected provider

- Setup of platform and accounts
- Tailor features and data flows
- Train users
- Integrate national and regional MRV

Can be funded by COMESA

5

Continue independent operation through national contract

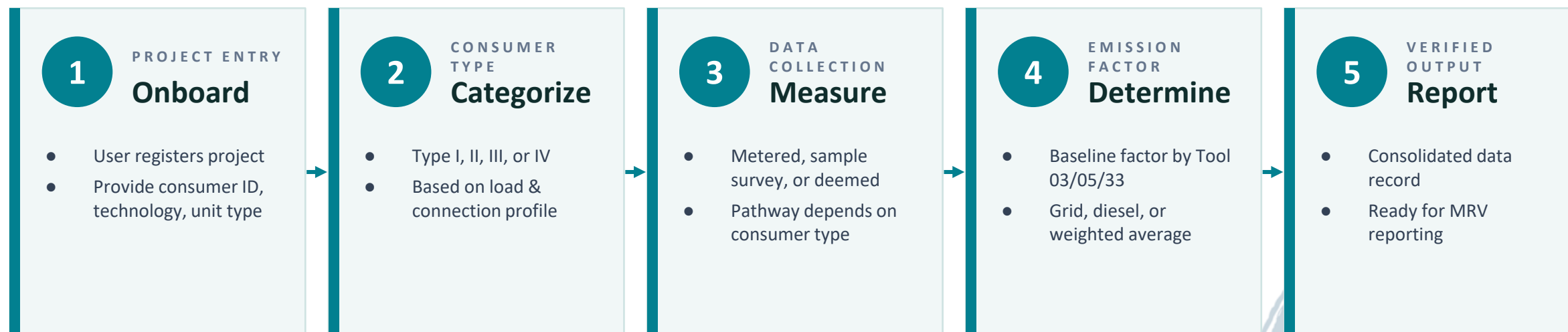
- Use dMRV in reporting and access to carbon finance
- Sustain the use of the tool
- Leverage the tool to create an enabling ecosystem

Funded by the country

Path summary: Countries lead Steps 1–2, COMESA can support Steps 3–4, and Step 5 transitions to fully country-owned operation.

B) Map energy access & carbon market pathways jointly

User adoption overview — from project entry to verified data



Pathway routing by consumer type

Each user follows one of three measurement paths in Step 3, based on the categorization in Step 2.

Metered

Direct readings from installed meters — Type I projects with verified consumption data.

Sample survey

Statistically representative sampling — Type II / III where individual metering isn't feasible.

Deemed consumption

Standard usage assumptions — Type IV or where measurement is impractical.



Thank you!

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