

DPGs for Climate Action Collection



Framework Compliance Summary:

All DPGs included in the DPGs for Climate Action Collection must meet the requirements outlined in the accompanying [identification framework](#).

To demonstrate compliance, each applying DPG is required to complete a structured submission. The information below reflects the self-reported responses provided as part of that process.

Prospect

DPG Type: Software

DPG Compliance & Profile Page: <https://www.digitalpublicgoods.net/r/prospect>

Description: Prospect is an open-source based platform that automatically collects, harmonises, aggregates, analyses, and displays data from any modern, sustainable energy solution that contributes to energy access.

Climate Alignment Assessment

Climate-Relevant Problem it Addresses: Prospect helps address the lack of reliable, standardised, and trusted data needed to support climate action, particularly in decentralised energy systems. Data on energy generation, usage, and system performance is often fragmented, inconsistently reported, and difficult to verify, limiting the ability of governments, funders, and implementers to assess impact and make informed decisions. This constrains auditable dMRV, clear carbon mitigation calculation, and the ability to track progress against climate goals. By aggregating, standardising, and validating data from multiple sources, Prospect enables more transparent, evidence-based decision-making and strengthens accountability across

climate and energy investments.

Climate-Relevant Objectives:

- Cross-cutting (data infrastructure, interoperability, digital MRV)

Sector Applications:

- Energy
- Transport

Common Deployment Settings

- Regional
- National
- Community
- Research

International Frameworks it Aligns With

- UNFCCC Guidelines
- NDC Tracking/Implementation
- National Inventory Systems/Transparency Frameworks

Climate Outcomes Facilitated

Measurable Outcomes it Can Help Facilitate:

- Improved data quality and reduced uncertainty
- Improved MRV systems (coverage, timeliness, completeness)
- Increased transparency in emissions or adaptation reporting
- Enhanced inter-agency coordination and governance
- Policy, regulatory or investment decisions informed

Specific Decisions or Actions it Has Helped Facilitate: Energy project performance monitoring, investment decision-making, and results-based financing verification. Prospect enables governments, funders, and project developers to assess the real-world performance of decentralised energy systems through standardised, real-time data, informing decisions on where to scale, optimise, or prioritise investments. By enabling auditable dMRV, Prospect provides the basis for carbon mitigation calculations, which serve as inputs for carbon engines and protocols, generating carbon certificates that can ultimately be monetised. This supports transparent results-based financing programmes, improves accountability of climate investments, and enables participation in carbon markets through verified, data-driven evidence of impact.

Deployment Countries: Germany, Kenya, Liberia, Nigeria, Rwanda, Togo, Uganda, Zambia

Adopting Organisations: World Bank, Global Energy Alliance for People and Planet (GEAPP), Common Market for Eastern and Southern Africa (COMESA), Beyond the Grid Africa (BGFA), and

*For detailed insight into Prospect's growth and adoption see [here](#)

Key Performance or Impact Indicators:

- Improved data accuracy and reliability across energy and climate reporting
- Strengthened trust and transparency in energy reporting among governments, funders, and implementers
- Reduced transaction costs for energy use and consumption related to monitoring, reporting, and verification processes
- Lowered barriers to access and participation in energy and climate programme

Technical Assessment

Modular Design:

Prospect is built on a modular, open-source architecture using Python and Ruby on Rails, organized around the following key components:

- **Data Ingestion Engine** — A guided data import wizard that supports multiple input channels, including Excel/CSV uploads, database connections, and automated API integrations from smart meters, IoT devices, mobile money platforms, and other digital systems. Each data source is configured as an independent integration, allowing new sources to be added without modifying core platform logic.
- **Data Processing & Validation Layer** — Incoming data is automatically aggregated, harmonized, and verified against configurable validation rules. A "Trust Trace" system records the results of data quality checks, providing an audit trail for all ingested records.
- **Customizable Dashboards (Grafana-based)** — Visualization dashboards can be fully tailored to each user's information needs, displaying complex energy data as actionable insights. Dashboard configurations are independent of the underlying data model, allowing different stakeholders (governments, financiers, companies) to have distinct views of the same data.
- **Multi-tenant Country Instances** — The platform supports independent country-level deployments (e.g., `ug.prospect.energy` for Uganda), each with its own data, configurations, and user base, while sharing the same core codebase.
- **REST API Layer** — A documented REST API (Swagger/OpenAPI at `app.prospect.energy/api-docs`) exposes platform functionality for programmatic access, enabling third-party integrations and automated data pipelines.
- **Standardized Data Model** — A well-defined relational data structure covering installations, meters, grids, solar home systems, customers, agents, payments, and time-series data. Custom data that doesn't map directly onto existing columns is stored in a flexible JSON structure with auto-generated per-source views.

Key modularity characteristics include: decoupled data sources via the integration framework, independently configurable dashboards, country-level tenant isolation, and a plugin-like integration architecture where new energy technologies (on-grid, mini-grid, off-grid, clean cooking) can be added through configuration rather than code changes.

Data Processing:

Processing Type	Capabilities
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Ingestion	Prospect supports multiple ingestion pathways designed for the energy access sector's diverse data landscape. Data can enter the platform through a guided import wizard supporting Excel/CSV uploads, direct database connections, and automated API integrations. The platform seamlessly ingests data from smart meters, IoT devices (e.g., remote monitoring sensors on solar installations), mobile money/PAYG platforms (such as Paygops and Angaza), and custom CRM systems. Each data source is mapped to a standardized internal schema covering installations, meters, grids, SHS, customers, agents, and time-series records. Data that cannot be directly mapped is captured in a flexible custom JSON structure with automatically generated per-source views.
Validation	The platform applies automated data validation and verification at ingestion time. A "Trust Trace" module records the results of all data quality checks, capturing provenance and audit information for each record. Validation includes schema conformance checks, consistency verification across related data tables (e.g., linking installations to customers and payment records), and configurable rules for domain-specific quality thresholds.
Dissemination	Validated data is made available through customizable Grafana-based dashboards for visual exploration and reporting, a documented REST API (Swagger/OpenAPI) for programmatic access, and exportable data products. The platform supports automatic reporting, evaluation, and learning from the performance of energy solutions, transparently summarizing data for governments, financiers, and implementing organizations.

Data Extraction Mechanism(s): API, CSV, JSON

Interoperability, Integration, and Adapters*: Level 4 Integrated: Uses machine-readable schemas and versioned APIs; external systems can "plug in" and pull climate variables without manual intervention.

Prospect integrates with a wide range of energy sector data sources and platforms:

- Smart meter APIs: Direct integrations with smart metering systems for automated real-time data collection from on-grid, mini-grid, and off-grid installations.
- IoT device platforms: Connectivity with IoT sensors deployed on solar home systems, clean cooking solutions, and productive use appliances for remote monitoring.
- Mobile money/PAYG CRMs: Integrations with pay-as-you-go platforms, including Paygops and Angaza for payment tracking, account snapshots, and customer lifecycle data.
- National energy reporting systems: Country-specific integrations supporting dMRV requirements for programs like ASCENT (World Bank/COMESA) across 20+ Eastern and Southern African countries.
- Excel/CSV/database imports: Flexible data import for organizations with existing datasets or manual reporting workflows.

- REST API (Swagger/OpenAPI): A fully documented API enabling any external system to push or pull data programmatically, supporting integration with MRV systems, NDC dashboards, carbon credit platforms, and third-party analytics tools.

Because all integrations produce data in Prospect's standardized schema, outputs can feed into national electrification monitoring dashboards, carbon mitigation calculation engines, and results-based financing verification systems.

Source: <https://gitlab.com/prospect-energy/prospect-server/-/wikis/User-Wiki/EN/Prospect-Integrations>

Adoption Readiness: Level 4 Orchestrated / Cloud-Optimized: The solution is designed for modern infrastructure. It includes "Infrastructure as Code" (e.g., Terraform, Helm, or Crawlable Data Catalogs) that allows for automated deployment into cloud environments (AWS/Azure/GCP) with built-in scaling and management.

Scalability, performance, and reliability:

- Multi-country deployment at scale: Prospect is currently deployed across multiple independent country instances, including Uganda, Tanzania, Malawi, Zambia, and others, serving as the dMRV platform for ASCENT — a World Bank/COMESA programme aiming to provide clean energy access to 100 million people across 20+ Eastern and Southern African countries.
- Horizontal scalability: The multi-tenant architecture allows country instances to be scaled independently, each with its own data, user base, and configurations, while sharing the same core codebase. New country deployments can be stood up without impacting existing instances.
- Diverse data source handling: The platform reliably ingests and processes data from a wide variety of concurrent sources — smart meters, IoT devices, PAYG CRMs, mobile money platforms, Excel uploads — aggregating and validating data in near real-time.
- Performance: Grafana-based dashboards are optimized for complex data visualization and can handle large time-series datasets spanning installations, meters, grids, and payment records across entire national portfolios.
- Reliability: The platform is in continuous production use by national rural electrification agencies (e.g., REA Zambia), development financiers (e.g., Sida), and private solar companies (e.g., SunGate, Oolu Solar, Chromevolt, NalaPayGo, Vitalite), supporting operational monitoring, regulatory reporting, and financing decisions.
- Open-source resilience: As a GNU AGPLv3 project with 15,000+ commits and 257 branches, the platform benefits from active development, version control, and the ability for any adopting organization to fork and maintain independently.

Sources: <https://gitlab.com/prospect-energy/prospect-server/-/wikis/User-Wiki/EN/User-Guide> | <https://www.ruralelec.org/prospect-advancing-data-driven-decision-making-for-energy-access-in-africa/>

Computing power:

Standard web deployment: Prospect runs as a web application stack (Python/Ruby on Rails with PostgreSQL and Grafana), deployable on standard cloud or on-premise infrastructure without requiring specialized high-performance computing resources.

- Moderate server requirements: The platform is designed for the energy access sector in low- and middle-income countries, prioritizing resource efficiency. Country instances can run on modest cloud infrastructure, with resource usage scaling primarily with data volume and number of connected data sources.
- Low-bandwidth optimization: The web interface and data ingestion wizard are designed for use in contexts where internet connectivity may be limited or intermittent, which is common across the African countries where Prospect is deployed.
- Energy-efficient data processing: Data processing is primarily event-driven (triggered by data imports and API integrations) rather than continuously compute-intensive, minimizing idle resource consumption. Time-series aggregation (e.g., the yearly_reports table) reduces query load for routine reporting.
- Scalable storage: The PostgreSQL-backed data model with flexible JSON columns for custom data allows efficient storage scaling as data volumes grow, without requiring schema changes.

Source: <https://gitlab.com/prospect-energy/prospect-server/-/wikis/Development>

Adoption Evidence and Additional Resources

Prospect has been selected as the regional digital MRV aggregation platform for the World Bank/COMESA ASCENT programme (USD 5 billion), which aims to provide clean energy access to 100 million people across 20+ Eastern and Southern African countries — with nine active ASCENT countries (Burundi, Ethiopia, Tanzania, Kenya, Malawi, Rwanda, Uganda, Zambia, Madagascar) participating in dMRV deployment. At the national level, Uganda's UECCC launched the final version of Prospect in 2024 to manage results-based financing claims under the USD 135 million Electricity Access Scale-Up Project, enabling real-time reporting, digital claim submission, and verification for accredited Energy Service Companies. REA Zambia was one of the first official adopters, using Prospect to monitor its full portfolio of electrification projects. The platform is also used by private solar companies, including SunGate (South Sudan), NalaPayGo (Lesotho), Oolu Solar (Burkina Faso), Chromevolt (Nigeria), and Vitalite (Malawi), as well as by programmes supported by the EU Delegation in Nigeria, GEAPP, EnDev Kenya, and Sida/Sweden. Prospect was co-funded by the European Union, Germany, Norway, the Netherlands, Sweden, and Austria, and was launched at the Global Off-Grid Solar Forum and Expo 2022 in Kigali.

Evidence links:

- <https://www.ruralelec.org/prospect-advancing-data-driven-decision-making-for-energy-access-in-africa>
- <https://www.ueccc.or.ug/final-version-of-prospect-digital-platform-launched/>
- <https://www.comesa.int/comesa-world-bank-host-ascent-carbon-days-2026/>
- <https://www.get-invest.eu/get-invest-and-a2ei-launch-global-open-source-data-platform-prospect/>
- <https://prospect.energy>

* Interoperability, Integration, and Adapters are evaluated in 5 levels:

Level 1 Isolated: Uses proprietary formats or hardcoded logic; requires custom "glue code" or manual conversion to work with external climate tools.

Level 2 Compatible: Data/software can be exported or integrated using common formats (e.g., CSV, JSON), but lacks automated synchronization or shared metadata.

Level 3 Standardized: Adheres to domain-specific standards (e.g., NetCDF/HDF5 for data, OGC APIs for software) but requires some configuration to link.

Level 4 Integrated: Uses machine-readable schemas and versioned APIs; external systems can "plug in" and pull climate variables without manual intervention.

Level 5 Ecosystem-Ready: Fully modular; follows "FAIR" principles (Findable, Accessible, Interoperable, Reusable) and supports automated cross-platform workflows (e.g., a climate model automatically pulling from your dataset).

*Adoption readiness perspective is assessed in 5 levels:

Level 1 Experimental/Raw: The solution exists as "source material" only. It requires significant manual effort, custom scripts, or compilation to become functional. There is no automated setup, and the user must "build" the environment from scratch.

Level 2 Documented/Structured: The solution is organized and includes instructions. Requirements and dependencies are clearly listed, but the setup process is still manual.

Level 3 Portable / Containerized: The solution is "packaged." It uses industry-standard wrappers (e.g., Docker, Parquet, or Standardized Schemas) that allow it to run or be read in any standard environment with a single command or import.

Level 4 Orchestrated / Cloud-Optimized: The solution is designed for modern infrastructure. It includes "Infrastructure as Code" (e.g., Terraform, Helm, or Crawlable Data Catalogs) that allows for automated deployment into cloud environments (AWS/Azure/GCP) with built-in scaling and management.

Level 5 Productized / Plug-and-Play: It offers a zero-friction experience, such as a managed API, a Serverless function, or a Public Data Marketplace listing. A user can gain value or insights within minutes without managing any underlying infrastructure.