

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.

Energy Access Explorer

DPG Type: Software

DPG Compliance & Profile Page: <https://www.digitalpublicgoods.net/r/energy-access-explorer>

Description: Energy Access Explorer (EAE) is an interactive geospatial platform that enables energy planners, clean energy entrepreneurs, donors, and development institutions to identify high-priority areas for energy interventions. It also functions as a dynamic information system, reducing software engineering and data transaction costs for both data providers and users, while facilitating data management and governance.

Climate Alignment Assessment

Climate-Relevant Problem it Addresses: Energy planning in many low- and middle-income countries is constrained by fragmented, inaccessible, and low-quality geospatial data. This limits countries' ability to:

- prioritise low-carbon electrification pathways
- align energy expansion with nationally determined contributions
- target vulnerable populations for climate-resilient infrastructure

- coordinate transparently across agencies and financiers

Developed by WRI in collaboration with over 300 partners, Energy Access Explorer supports climate-compatible energy transitions through a data-informed, integrated, and inclusive approach to universal energy access. It provides a transparent, interactive geospatial platform to visualise and analyse high-priority areas for energy interventions across Africa and South Asia.

Climate-Relevant Objectives:

- Mitigation
- Adaptation and resilience
- Climate monitoring
- Cross-cutting (data infrastructure, interoperability, digital MRV)

Sector Applications:

- Agriculture, forestry and other land use
- Energy

Common Deployment Settings

- Community
- City/Municipal
- National

International Frameworks it Aligns With

- IPCC methodological guidance
- UNFCCC guidelines
- NDC tracking and implementation
- National inventory systems / transparency frameworks
- National Adaptation Plans (NAPs)
- Long-term low-emission development strategies (LT-LEDS)

Climate Outcomes Facilitated

Measurable Outcomes it Can Help Facilitate:

- Improved data quality and reduced uncertainty
- Strengthened adaptation planning and resilience capacity
- More informed policy, regulatory, and investment decisions
- Enhanced inter-agency coordination and governance

Specific Decisions or Actions it Has Helped Facilitate

Mitigation-related decisions

- Least-cost electrification planning and investment targeting for renewable energy deployment
- Clean cooking strategy development

- Electrification of public infrastructure (health, education, agriculture)

Example: Ethiopia used EAE to prioritise off-grid electrification across 145 woredas under a World Bank-supported results-based financing programme targeting 19 million people.

Adaptation and resilience decisions

- Identification of climate-vulnerable communities lacking reliable power
- Electrification of healthcare facilities to improve resilience
- Targeting productive-use energy for climate-resilient livelihoods

Example: Nigeria's Rural Electrification Agency uses EAE under the Africa Mini Grids and Energising Agriculture programmes to prioritise agricultural value chains and climate-resilient rural infrastructure.

Governance and transparency

- Improved coordination between national and subnational institutions
(e.g. *County Energy Plans in Kenya aligned with national Integrated Energy Planning*)
- Strengthened stakeholder engagement and knowledge exchange through EAE Working Groups

Example: Working Groups in countries such as Ethiopia and Tanzania bring together government agencies, utilities, development partners, and researchers to strengthen energy data governance, foster cross-sector collaboration, and support transparent, evidence-based decision-making.

Deployment Countries: Ethiopia,, India, Kenya, Nepal, Nigeria, , Tanzania, Uganda, Zambia, Democratic Republic of Congo

Adopting Organisations: Food and Agriculture Organization, United Nations Human Rights Council (UNHRC), United Nations Development Programme, United Nations Industrial Development Organization, World Health Organization (WHO), World Bank

Key Performance or Impact Indicators: EAE's open-source nature has proven to be a scalable solution at both national and subnational levels. With over 40,000 users, 48% of whom are women, users can customise analyses and identify areas of interest based on their perspective. In Kenya, EAE has supported local governments in Makueni, Narok, and Kitui counties in developing County Energy Plans that contribute to Kenya's Integrated National Energy Plan. At the national level, EAE informs about least-cost electrification planning and clean cooking strategies. In Ethiopia, the Ministry of Water and Energy, in collaboration with the World Bank, used EAE to prioritise off-grid electrification for 19 million people across 145 woredas through a results-based financing programme. In Nigeria, where over 85 million people lack electricity, the Rural Electrification Agency (REA) is using EAE to support its Energising Agriculture Programme and the \$0.5 billion Africa Mini Grids Programme, recognised among the top partnerships transforming Nigeria's renewable energy landscape. Across Ethiopia, Zambia, Uganda, Tanzania, and India, EAE is helping stakeholders identify electrification priorities for healthcare, education, agriculture, and livelihoods, enhancing energy access for millions.

Technical Assessment

Modular Design: EAE is built using a modular architecture consisting of:

- The EAE frontend is an interactive, web-based geospatial interface for visualizing, overlaying, and analyzing multiple geospatial data layers (e.g., population, grid, health, agriculture, renewable resources). It allows users to dynamically combine layers to identify priority areas for electrification and clean energy, supporting customizable weighting and scenario-building (e.g., least-cost, healthcare access, productive use, climate resilience). Results are generated in real-time, displayed on maps, and provided as downloadable outputs for transparent comparison. Designed for accessibility, it prioritizes usability for non-technical users, functions in low-bandwidth settings, and lowers barriers to inclusive, data-informed energy planning.
- Backend services. EAE's backend infrastructure provides an essential, user-friendly data governance system for accessible, reliable, and actionable energy data. Designed for seamless data integration, standardization, and sharing, EAE offers a centralized, flexible platform for governments, utilities, and development partners to utilize high-quality geospatial energy data. The clear, shareable data format lowers access barriers, encouraging stakeholders to contribute and collaborate. Prioritizing interoperability and ease of use, the system reduces technical barriers, fostering an inclusive data-sharing ecosystem.

Data Processing:

Processing Type	Capabilities
Ingestion	Upload of standardized geospatial layers (GeoJSON, raster, shapefiles)
	Integration of satellite-derived datasets
	API-based ingestion where available
Validation	Schema validation before upload
	Administrative boundary alignment
	Standardized data formats
	Manual QA/QC with EAE Working Groups
Dissemination	Interactive visualization dashboards
	Downloadable datasets
	Exportable analysis outputs

Data Extraction Mechanism(s): API

Interoperability, Integration, and Adapters*: *Level 3 Standardized* - Adheres to domain-specific standards, but requires some configuration to link.

EAE can integrate with National electrification master plans, subnational planning portals, NDC implementation tracking systems, rural electrification monitoring dashboards, and investment planning tools, which can all be integrated with the system because data can be exported in standard formats, allowing it to easily integrate into MRV systems and GIS workflows.

Adoption Readiness:** *Level 4 Orchestrated/Cloud-Optimized* - The solution is designed for modern infrastructure. It includes "Infrastructure as Code" that allows for automated deployment into cloud environments with built-in scaling and management.

Scalability, performance, and reliability:

- Supports 40,000+ users.
- Cloud-based deployment.
- Country instances are scalable independently.
- Modular replication reduces deployment cost.
- Used at the national scale across multiple countries.

Computing power: The solution is primarily a web-based GIS visualization tool with moderate server requirements for deployment and operation. Its design is explicitly optimized for low-bandwidth environments and focused on usability in low-resource contexts, implying a design that minimizes data transfer and client-side processing, which consequently keeps energy use at scale relatively efficient compared to more resource-intensive GIS platforms.

Adoption Evidence and Additional Resources

- [100+ governments and partners using EAE for clean energy access](#)
- [Rural health clinics gain reliable power through data-driven planning](#)
- [Scientific study on energy access and geospatial planning \(ScienceDirect\)](#)
- [Enabling climate-friendly and viable energy transitions \(WRI\)](#)
- [Clean energy scenario planning for Tanzania](#)
- [Data governance approaches within Energy Access Explorer](#)
- [Makueni County clean energy planning \(Kenya case study\)](#)
- [Health and energy access research \(The Lancet Planetary Health\)](#)
- [Climate Compatible Growth – Component 2 report](#)
- [Peer-reviewed research on energy access and health outcomes \(PubMed\)](#)
- [Open-source approaches to closing the energy access gap in Africa \(Energypedia\)](#)
- [GIS-based electricity access for healthcare in Uganda](#)
- [Advancing Kenya's clean cooking agenda using EAE](#)
- [Productive use of energy in agriculture \(Kenya drought case study\)](#)
- [Energy Access Explorer overview video](#)
- [Tanzania investment prospectus for energy access](#)
- [Energy access investment prospectus \(general\)](#)
- [AI and solar mapping in Energy Access Explorer](#)
- [Research on climate and energy systems \(Cell Press\)](#)

- [Climate resilience planning in Assam \(WRI India\)](#)
-

* 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.