

A French university as coordinator is seeking partners for a European project focused on data sharing and artificial intelligence for renewable and hybrid energy systems for the call HORIZON-CL5-2026-11-D3-23.

## Summary

Profile type

**Research & Development Request France**

Company's country

POD reference

**RDRFR20260423014**

Profile status

**PUBLISHED**

Type of partnership

**Research and development cooperation agreement**

Targeted countries

• **All countries**

Contact Person

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Term of validity

**23 Apr 2026**

**23 Apr 2027**

Last update

**23 Apr 2026**

## General Information

### Short summary

A French university active in energy systems, artificial intelligence, and data-driven modelling is preparing a European project. The project aims to develop advanced artificial intelligence models using large and diverse datasets, with applications in renewable and hybrid energy systems, including photovoltaic, wind, and hydrogen systems. The consortium is seeking partners from industry, research, and SMEs to contribute to data provision, model development, and real-life validation.

### Full description

The french public research university has strong expertise in energy systems, artificial intelligence (AI), and data-driven modelling. The research team has extensive experience in modelling, control, and diagnosis of complex systems, particularly hybrid renewable energy systems integrating photovoltaic (PV), wind, and hydrogen technologies.

The project addresses a key challenge in the digitalisation of the energy sector: the limited availability of large-scale, high-quality, and interoperable datasets required to develop reliable AI solutions. Energy data is often fragmented across multiple stakeholders and infrastructures, with constraints related to privacy, cybersecurity, and data ownership. These limitations hinder the deployment of scalable AI-based monitoring and control solutions and reduce the efficiency of renewable energy integration.

In this context, the Horizon Europe project HYDRA-AI+ aims to develop a secure, interoperable, and scalable framework for AI-driven monitoring, control, and data sharing in hybrid renewable energy systems. The project is aligned with European priorities on digital energy, interoperability, and the development of common data spaces. The main objectives are:

- Develop advanced AI models for forecasting, anomaly detection, fault diagnosis, predictive maintenance, and energy optimisation
- Enable interoperability and integration of heterogeneous datasets from renewable energy systems, hydrogen technologies, weather data, and industrial processes
- Implement secure and privacy-preserving data sharing approaches, including federated learning and distributed data infrastructures
- Validate the proposed solutions through real-life use cases based on hybrid PV–wind–hydrogen systems.

The project targets applications in smart grids, renewable energy integration, energy storage, and industrial energy systems, contributing to a more resilient and efficient energy infrastructure.

HYDRA-AI+ promotes strong international and cross-sector collaboration to combine complementary expertise, facilitate access to diverse datasets, and develop scalable solutions. This approach supports the creation of trusted data-sharing ecosystems aligned with European data space initiatives.

The expected outcomes include the development of interoperable data-sharing frameworks, trustworthy AI models for energy applications, and validated solutions in real and simulated environments. The project will contribute to improving the efficiency, reliability, and resilience of hybrid renewable energy systems and to accelerating the energy transition and decarbonisation.

The consortium seeks partners with expertise in AI, data platforms, cybersecurity, energy systems, hydrogen technologies, and access to relevant datasets and pilot infrastructures, in line with Horizon Europe objectives.

### Advantages and innovations

The proposed approach goes beyond state-of-the-art solutions by combining advanced artificial intelligence (AI) techniques with secure, scalable, and interoperable data-sharing frameworks tailored to the energy sector. Unlike conventional approaches that rely on isolated and limited datasets, the project enables the integration of large-scale and heterogeneous data sources through federated learning and distributed data infrastructures. This allows the development of more robust, generalisable, and trustworthy AI models.

A key innovation lies in the design of AI models specifically adapted to complex hybrid renewable energy systems integrating photovoltaic (PV), wind, and hydrogen technologies. These systems are characterised by high variability, uncertainty, and multi-domain interactions, which are not sufficiently addressed by existing approaches.

The project also introduces a collaborative and distributed environment for training, validating, and benchmarking AI models across multiple stakeholders. This framework supports continuous improvement, scalability, and reproducibility of the developed solutions, while enabling cross-institutional cooperation.

In addition, the project leverages a hybrid data strategy combining real, simulated, and synthetic data to overcome data scarcity and imbalance issues. This approach significantly enhances model accuracy, robustness, and transferability across different operating conditions and energy contexts.

The project offers several key advantages.

- 1, it improves the performance and robustness of AI models through access to diverse, multi-source datasets.
- 2, it ensures privacy-preserving and secure data sharing using federated and distributed approaches.

3, it demonstrates strong applicability to real-world energy systems through validation on hybrid PV–wind–hydrogen systems and industrial environments. Finally, it provides scalable and interoperable solutions aligned with European data space initiatives

#### Technical specification or expertise sought

The project seeks partners with complementary technical expertise in the following areas:

- Artificial intelligence and machine learning for energy systems, including forecasting, anomaly detection, fault diagnosis, predictive maintenance, and optimisation
- Data platforms and data engineering, covering data integration, interoperability, and secure data-sharing solutions
- Federated learning and distributed data infrastructures, with a focus on privacy-preserving and trustworthy data processing
- Energy systems modelling and control, including smart grids, renewable energy integration, and hybrid systems combining photovoltaic, wind, and hydrogen technologies
- Hydrogen technologies, including electrolyzers, fuel cells, and energy storage systems
- Digital twins and advanced simulation tools for complex and hybrid energy systems
- Industrial data acquisition and management, including SCADA systems, IoT sensors, and energy monitoring platforms
- Partners able to provide access to relevant datasets, pilot infrastructures, or real-life use cases are particularly encouraged to participate, as they will play a key role in validating and demonstrating the proposed solutions.

#### Stage of development

**Under development**

#### Sustainable Development goals

- **Goal 17: Partnerships to achieve the Goal**
- **Goal 12: Responsible Consumption and Production**
- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 7: Affordable and Clean Energy**
- **Goal 13: Climate Action**
- **Goal 11: Sustainable Cities and Communities**

#### IPR Status

**No IPR applied**

#### IPR Notes

## Partner Sought

#### Expected role of the partner

The project seeks partners with clearly defined technical and operational roles within a collaborative research and innovation framework.

The expected partner profiles and contributions include:

- AI and data technology partners: development of machine learning models for forecasting, anomaly detection, predictive maintenance, and optimisation; design of data processing pipelines, model validation, and explainability tools
- Data platform providers and SMEs: development and integration of secure and interoperable data-sharing solutions, including distributed data infrastructures, data governance, and management systems
- Energy sector stakeholders (utilities, grid operators, equipment manufacturers): provision of real-world datasets (e.g. SCADA, IoT, operational data), definition of use cases, and participation in pilot demonstrations and validation activities
- Renewable and hydrogen technology experts: modelling, simulation, and validation of hybrid PV–wind–hydrogen energy systems
- Research organisations and universities: contribution to system modelling, AI development, performance evaluation, and integration of multi-domain energy systems

Partners will actively contribute to:

- Data provision, integration, and governance
- Co-development, training, and testing of AI models
- Implementation and validation in pilot and real-world environments
- Joint research activities within structured technical work packages

Collaboration will be organised through coordinated work packages, joint development activities, and regular technical exchanges, ensuring effective knowledge sharing, interoperability, and technology transfer across the consortium.

Type of partnership

**Research and development cooperation agreement**

Type and size of the partner

• **SME <=10**

## Call Details

Framework program

**Horizon Europe**

Call title and identifier

**Horizon Europe – Cluster 5 (Climate, Energy and Mobility)**

**Data sharing to support the training and development of AI foundation models in the energy sector – HORIZON-CL5-2026-11-D3-23**

Submission and evaluation scheme

**Single-stage submission**

Anticipated project budget

**4-6M€**

Coordinator required

**No**

Deadline for EoI

Deadline of the call

15 Sep 2026

Project duration in weeks

**168**

1 Dec 2026

Web link to the call

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/HORIZON-CL5-2026-11-D3-23?order=DESC&pageNumber=1&pageSize=50&sortBy=relevance&keywords=HORIZON-CL5-2026-11-D3-23&isExactMatch=true&status=31094501,31094502&f>

Project title and acronym

**AI-driven Monitoring, Control and Data Sharing for Hybrid Renewable Energy Systems: HYDRA-AI+**

## Dissemination

Technology keywords

- **04007001 - Energy management**
- **01003008 - Data Processing / Data Interchange, Middleware**
- **01003003 - Artificial Intelligence (AI)**

Targeted countries

- **All countries**

Market keywords

- **06003010 - Distributed power and grid connection**
- **06002003 - Power grid and distribution**
- **08002001 - Energy management**
- **02006004 - Data processing, analysis and input services**
- **02007016 - Artificial intelligence related software**

Sector groups involved

- **Digital**