VACANCY NOTICE FOR A CONTRACT AGENT SELECTION

Job title	**FGIV - Scientist - Exploratory Research Project - AI Modelling & Supply Chain Risk Assessment**
Reference	EC-2026-JRC-529520
Application deadline	**14/12/2026 - 12.00 (noon, Brussels time)**
Directorate-General (full name)	Joint Research Centre (JRC)
Unit	Economics of Climate Change, Energy and Transport Unit
Place of assignment	Seville, Spain
Domain	Science and Research
Contract type and Function Group	Contract Agent 3b FGIV

About us

The Joint Research Centre (JRC) provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society.

The current vacancy is with the Directorate for Energy, Mobility and Climate. Its mission is to provide support to EU policies and technology innovation ensuring sustainable, safe, secure and efficient energy production, distribution and use, fostering sustainable and efficient mobility in Europe, and providing scientific and technical analyses in support of integrated research for related EU policies.

Specifically, the vacancy is in the Economics of Climate Change, Energy and Transport Unit. The unit conducts economic analysis of climate, energy and transport policies, both at the EU and global levels, using different databases and expertise with in-house economic models and econometric tools.

The successful candidate will work directly with the team addressing EU Port Strategy and Green Shipping Corridors, as well as with collaborating teams across the JRC working on resilience of transport networks and supply/ value chains, strategic corridors and geopolitical risk assessment. Further information on Transport and mobility

The Unit Centre for Advanced Studies oversees the overall JRC Exploratory Research Programme.

The vacancy is within the **Exploratory Research Project 'Geopolitical Shock Propagation in European Supply Chains - Generative AI Scenario Modelling' (GEO-SCAI)**. The JRC Exploratory Research Programme is a strategic initiative

characterised by ideas that might lead to novel results and qualitatively enrich current JRC scientific work.

About the role

We offer a dynamic position in an international organisation at the intersection of artificial intelligence, geospatial analysis, and EU policy support. You will contribute to cutting-edge research on modelling how geopolitical shocks propagate through global supply chains, developing and using state-of-the-art AI techniques including Generative Adversarial Networks (GANs) and Graph Neural Networks (GNNs). The work will directly inform EU policy on strategic autonomy, supply chain resilience, and critical infrastructure protection. In addition, the work offers the opportunity for research and scientific publications. You will join a multidisciplinary team of experts in shipping, logistics, energy infrastructure, and territorial analysis, benefiting from a collaborative, family-friendly working environment with opportunities for occasional travel and conference participation.

The Exploratory Research Project GEO-SCAI will analyse how geopolitical shocks propagate through supply chains affecting the EU and explore policy levers to effectively mitigate cascade effects and ensure continuity along international trade and shipping networks. To answer this, GEO-SCAI will:

(i) construct a multilayer graph that couples maritime lanes, rail, road and energy infrastructures, commodity flows
(ii) train a Generative Adversarial Network (GAN) using JRC sourced open media and thematic agent feeds to produce shock scenarios ranging from known threats (e.g., closing Red Sea or the Straits of Hormuz, failure of transport infrastructure assets) to hybrid threats and 'black swan' events
(iii) apply Graph Neural Network (GNN) classifiers to quantify cascade risk (capacity loss, delay propagation, supply chain disruption)
(iv) map results onto concrete EU policy instruments (strategic stockpiles, alternative corridor investment, foreign investment screening).

Please see also Working at the European Commission

The jobholder will carry out scientific and technical tasks in accordance with the GEO-SCAI project, with special emphasis on developing and training AI models (GANs and GNNs) to simulate and predict the cascade effects of geopolitical shocks on European supply chains.

S/he will contribute to:
• Constructing a multilayer graph that couples maritime lanes, rail, road, and energy infrastructures with commodity-flow data using existing JRC data sources (maritime AIS data, transport networks, traffic flows) and high-frequency trade statistics;
• Training and validating Generative Adversarial Networks (GANs) using geopolitical context and asset vulnerability inputs to synthesise plausible shock scenarios ranging from known disruptions (e.g., Red Sea closure, Suez Canal blockage) to "unknown-unknown" events;



- Developing and deploying Graph Neural Network (GNN) classifiers to predict cascade impacts including capacity loss, delay propagation, and supply-chain disruptions across multimodal networks;
- Implementing mitigation strategies for known GAN pitfalls (mode-collapse, bias) and ensuring model interpretability through attention-based attribution and SHAP analyses;
- Defining policy-relevant resilience indicators applicable to multi-graph networks (e.g., node/edge betweenness, time-to-recover, supplier diversification);
- Validating model outputs through back-testing on historical disruptions (Suez Canal 2021, Red Sea 2023) and expert review workshops;
- Publishing research findings in peer-reviewed journals and presenting results at international conferences (AI, transport, and security forums);
- Maintaining open-source software repositories including data pipelines, GAN training scripts, GNN models, and visualisation dashboards;
- Providing regular progress reports to the Project Leader and communicating research outcomes to scientific communities and policy counterparts.

Qualifications, experience and skills

We are looking for a highly motivated researcher with the following essential qualifications:

- A doctoral degree in computer science, data science, artificial intelligence, transport/logistics engineering, geospatial sciences, or related fields. Alternatively, completed university studies of at least three years attested by a diploma and at least five years of research experience in a field relevant to the position;
- Extensive knowledge and experience in machine learning and deep learning, particularly in graph-based methods (Graph Neural Networks, graph representation learning) and/or generative models (Generative Adversarial Networks, Variational Autoencoders);
- Strong programming skills in Python and proficiency with relevant ML frameworks (PyTorch, TensorFlow, PyTorch Geometric);
- Experience in collecting, processing, and analysing large geospatial and/or network datasets (e.g., AIS data, transport networks, commodity flows);
- Solid record of research activities including publications in international peer-reviewed journals;
- Excellent oral and written communication skills in English (C1).

In addition, the following competences will be considered an advantage:

- Knowledge of supply chain management, logistics, maritime transport, or energy infrastructure;
- Familiarity with geospatial analysis tools and databases (GIS, PostGIS, geospatial libraries);
- Understanding of geopolitical risk assessment and critical infrastructure protection;
- Knowledge of multilayer network theory and complex systems analysis;
- Ability to work in a team and in a multi-cultural environment;



• Experience with cloud computing environments and high-performance computing.

The candidate is expected to be creative, work independently, and demonstrate strong analytical and problem-solving skills.

How to express your interest?

Please submit your application via the JRC Recruitment Portal.

Being registered for at least one of the two following databases is also necessary:

- the Selection process for contract staff | EU Personnel Selection – EU Careers (EPSO CAST FG IV), which is used by a wide range of organisations (institutions, bodies, offices and agencies of the European Union), or
- the JRC Open Call for Researchers, (JRC Call COM/1/2015/GFIV – Research), which is mainly used by the JRC.

Eligibility

For eligibility please consult this page with all the information needed.