Ordnance Survey: a global impact through UK-funded programmes

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1. SUMMARY

Ordnance Survey (OS), the National Mapping Agency of Great Britain, is a global leader in geospatial innovation and data. OS uses its skills and knowledge to support other countries to develop their own National Spatial Data Infrastructure (NSDI) and realise the value of using geospatial information within decision-making processes.

OS's core focus is on providing mapping services and location insight of Great Britain, a key strand of its business strategy is focused on delivering global impact. This is being delivered through the development of strategic partnerships with the UK Government and international organisations. Through these, OS delivers sustainable development solutions that address climate resilience, urban planning, and land governance.

This report explores OS's international objectives, its alignment with global initiatives such as the UN Sustainable Development Goals (SDGs) and showcases how two projects in the Democratic Republic of Congo and Ethiopia, are being supported through UK-based collaboration.

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1. Introduction

Ordnance Survey (OS) is the National Mapping Agency of Great Britain, with a long history of working with a wide range of organisations, both in the UK and internationally. OS is responsible for creating, maintaining and distributing detailed location information for Great Britain. This geographic information is weaved into the very fabric of everyday life, and is used by the public sector, private sector and citizens alike. As an organisation, OS operates across every segment of the geospatial value chain, from positioning to sourcing to refining to distributing and applying. This data is used by many customers across many traditional and emerging segments. An important part of OS's work is operating in the international domain; this includes supporting global policy development and supporting delivery of international programmes. This work enables OS to deliver global impact through a UK-focused approach. Acting as a delivery partner, and in collaboration with other UK bodies such as the British Geological Survey, OS has delivered influential projects through the UK Foreign, Commonwealth and Development Office (FCDO).

This report will provide an overview of some of OS's international priorities and share a deep dive into the FCDO development programmes which are linked to the UN's Sustainable Development Goals (SDGs). This report will highlight how geospatial delivery through UK-funded projects has enabled OS to continue to support countries through a government-to-government framework, focused on collaboration to provide better outputs, and moving to a model that supports sustainable development objectives that are focused on each individual country's requirements.

2. History of OS International

OS has a long history of international work and has worked in over 100 countries since it was established in 1791. This work has changed and developed as the world has developed. Early records show that OS was involved in international mapping initiatives as early as 1865 when it surveyed Jerusalem to help the city improve its water supply and in the early- to mid-1900's OS provided surveys at disputed international borders. In 1946 the Directorate of Overseas Surveys (DOS) was formed which, as well as mapping many British colonies and protectorates, and some non-Commonwealth countries, provided advice to foreign governments on all aspects of surveying and mapping. The DOS merged with OS to become OS International in 1991, which operated in various formats until 2024, providing technical and consultancy services.
Today OS still helps countries all over the world to grow their geospatial capability. Its focus is in on delivering global impact through collaboration with governments and partners worldwide to unlock the value of geospatial data, supporting national development, digital transformation and sustainable growth.

3. A Global Impact

3.1 The Importance of Geospatial in achieving the Sustainable Development Goals

Accurate geospatial information is a key enabler of modern digital government, economic progress and better citizen outcomes. It enables countries to plan and manage urban growth, and ensures that physical and digital infrastructures develop in alignment with population needs and environmental considerations. By integrating geospatial data into decision-making, governments can advance sustainable development, strengthen climate resilience, and unlock opportunities for economic growth. Geospatial information also supports the transition to clean energy by identifying optimal sites for renewable installations and improving energy

> *"Geospatial information is a critical component of national infrastructure."*
>
> Stefan Schweinfest, Director, Statistics Division, United Nations Department of Economic and Social Affairs (DESA) (United Nations, n.d.)

distribution networks. In short, geospatial capability is not just a technical asset—it is a strategic enabler for inclusive, resilient, and sustainable development.

High-quality geospatial data underpins a wide range of sectors, from transportation and utilities to agriculture and disaster management. Beyond its operational value, geospatial data can generate significant revenue streams through effective taxation, public services, and value-added applications. It drives innovation by enabling emerging technologies such as artificial intelligence, autonomous systems, and smart city solutions. Countries that invest in robust geospatial ecosystems position themselves to attract investment, foster entrepreneurship, and deliver better public services.

Recognising the transformative potential of geospatial, the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) developed the Integrated Geospatial Information Framework (UN-IGIF) (United Nations, 2026). The UN-IGIF provides a strategic blueprint for countries to establish sustainable geospatial infrastructures, covering governance, data standards, technology, and capacity development. Its importance lies in creating a common foundation that ensures interoperability, institutional readiness, and long-term viability of geospatial systems worldwide.

OS actively supports the implementation of UN-IGIF by combining global thought leadership with practical delivery. Beyond contributing to policy dialogues and standards development, OS works on the ground with partner governments to implement UN-IGIF principles—helping them design governance models, curate authoritative datasets, and deploy platforms that translate geospatial insights into actionable decisions. This dual role—shaping global frameworks and enabling national adoption—positions OS as a trusted partner in advancing geospatial maturity across diverse contexts.

3.2 The direction of International at OS

OS's international strategy is closely aligned with UK Government priorities. This ensures that OS's global engagements support national objectives and leverage the UK's diplomatic and development frameworks. By focusing on delivering through government channels, OS strengthens its ability to deliver impactful, sustainable solutions while maintaining accountability and strategic alignment.

OS's international work is structured around three themes: delivery, technical collaboration, and thought leadership. These themes contain five lenses that guide the strategies' approach. These lenses collectively position OS as a trusted partner in shaping and delivering geospatial solutions worldwide.

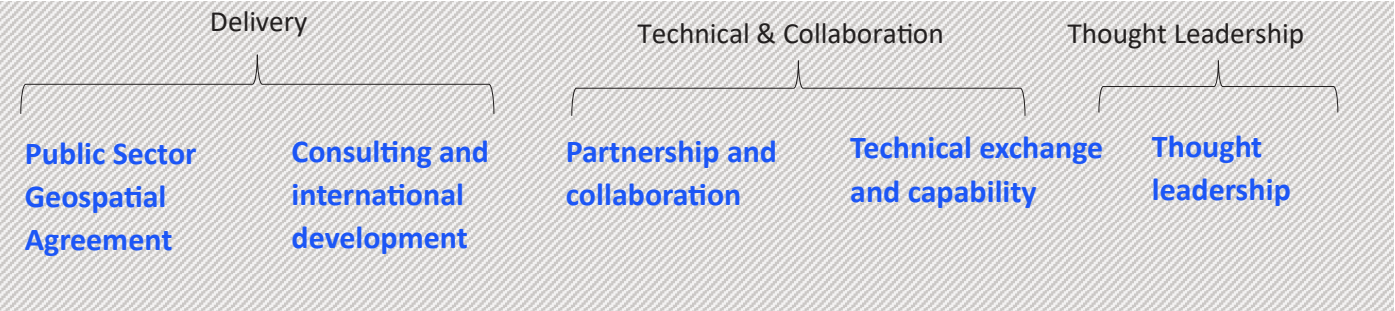

Figure 2: A diagram showing the three themes and five lenses of the OS International Strategy.

To maximise impact in consulting and international development, OS delivers its international projects through the Foreign, Commonwealth & Development Office (FCDO), who lead the UK's diplomatic, development and consular work around the world. This approach enables government-to-government engagement, ensuring that interventions are embedded within national systems and aligned with broader development objectives. By working through FCDO-funded initiatives, OS supports countries in transforming their geospatial capabilities—building institutional resilience, improving data governance, and enabling evidence-based decision-making across sectors.

3.3 A move towards collaboration with FCDO

The Foreign, Commonwealth & Development Office (FCDO) is a ministerial department of the UK Government responsible for diplomacy, development, and consular services worldwide. Its mission is to promote sustainable development, strengthen governance, and foster resilience in partner countries. Through its programmes, FCDO provides a platform for UK organisations to deliver technical expertise that supports inclusive growth and stability.

OS serves as a trusted delivery partner, or Centre of Expertise, on two FCDO-funded initiatives: the Green Cities, Infrastructure and Energy Programme (GCIEP) and the Land Facility (LF) Programme. These programmes focus on accelerating development in low- and middle-income countries, addressing critical challenges in urban planning, climate resilience, and land governance. By embedding geospatial solutions into national systems, the

programmes delivery partners collaborate with governments to ensure they make evidence-based decisions that improve service delivery and economic outcomes.

Under GCIEP, OS supports the creation of geospatial programmes that enhance urban planning and climate resilience. This includes developing spatial platforms that integrate data on terrain, infrastructure, and hazards to inform sustainable city growth. The Land Facility Programme focuses on land administration and governance, where OS provides consultancy on building authoritative basemaps and cadastral systems—essential for addressing and postal systems, taxation, and dispute resolution. Both programmes exemplify OS's commitment to delivering practical, scalable solutions that strengthen institutional capacity.

OS brings deep technical expertise across the geospatial value chain, including data collection, quality assessment, visualisation, and capacity building. Its consultancy services draw on decades of experience in national mapping and digital transformation, helping governments design interoperable systems and sustainable operating models. OS leverages the skills of geospatial professionals from diverse disciplines—data science, surveying, cartography, and analytics—to deliver tailored solutions that meet the unique needs of partner countries.

4. GCIEP's Building Climate Resilience in Kinshasa

One example of OS's work with a global impact through FCDO was a recently completed project in the Democratic Republic of Congo.

OS worked with the British Geological Survey and the City of Kinshasa to create a spatial platform to improve the city's climate emergency preparedness. Kinshasa is an extremely fast-growing city, with 17 million residents to date. However, being situated on the large Congo River has its challenges, and Kinshasa regularly experiences extreme climate events such as flooding, landslides, and heat stress.

The unregulated urban growth, complex terrain and limited infrastructure have led to severe events such as the December 2023 floods which caused over 100 fatalities.

Whilst OS looked at collating openly available spatial data, analysing the data, and building the spatial platform, BGS began at collecting geoscientific data to create a map of areas susceptible to gully formation.

4.1 Methodology

Using Esri's ArcGIS Online as a spatial platform, OS and BGS were able to create a geospatial tool indicating climate vulnerability by integrating open-source datasets. It was important to source high-quality geospatial data on natural and built environments,

administrative boundaries and critical infrastructure systems, with a focus on power networks, water supply systems, healthcare facilities, transportation networks and emergency services.

A detailed risk map exercise was undertaken to visualise areas most susceptible to flooding and landslides. Multiple data sources were used and assessed, evaluating their accuracy, currency, and completeness. Once they were validated, the datasets (including Digital Terrain Models (DTM)) were analysed to identify topographical features such as low-lying floodplains and steep slopes prone to landslides. These were overlaid with information on natural and man-made drainage systems, and existing infrastructure, to assess risks.

The resulting maps highlighted critical risk zones across Kinshasa, including densely populated settlements and key infrastructure such as power, water supply, and transportation networks. These insights enabled the identification of priority areas for intervention, such as the development of urban green spaces for flood mitigation, the designation of safe evacuation zones, and the planning of resilient infrastructure. By integrating spatial analysis with local context, the risk mapping will provide a robust foundation for targeted climate adaptation strategies and long-term urban resilience planning.

Additionally, BGS used existing geoscientific data including hydrogeological and geological maps, and remote sensing data to create a dataset which shows gully erosion and ground deformation.

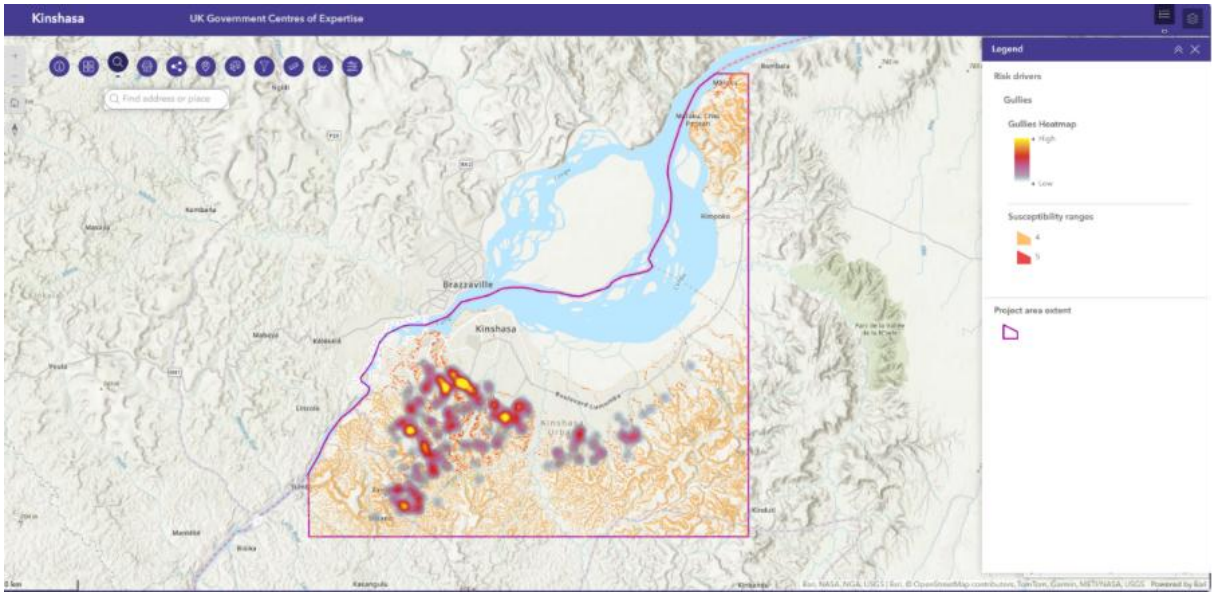

Figure 3: An example of the Kinshasa webmap portal, displaying susceptibility to gullying across Kinshasa.

This data was added to the platform and could be overlaid with the riverine flood zones and, through the blue spot analysis, mapping showed which areas were susceptible to a wide range of climate hazards.

4.2 Results

The resulting platform has allowed the City of Kinshasa to visualise which areas and communities are susceptible to climate hazards, highlighting which areas should be a focus for protection should a hazard arise, as well as effectively plan for urban development to avoid areas susceptible to large and frequent hazards.

The project aligned to several SDGs and demonstrated the value of geospatial in underpinning key decisions regarding our changing climate, particularly the prevention, planning and preparation of climate hazards.

There is scope to improve the platform and build upon what has been created in future. The underlying data is a snapshot in time, and so adding data to reflect real world changes, and continually improving the feed of data would produce validated results.

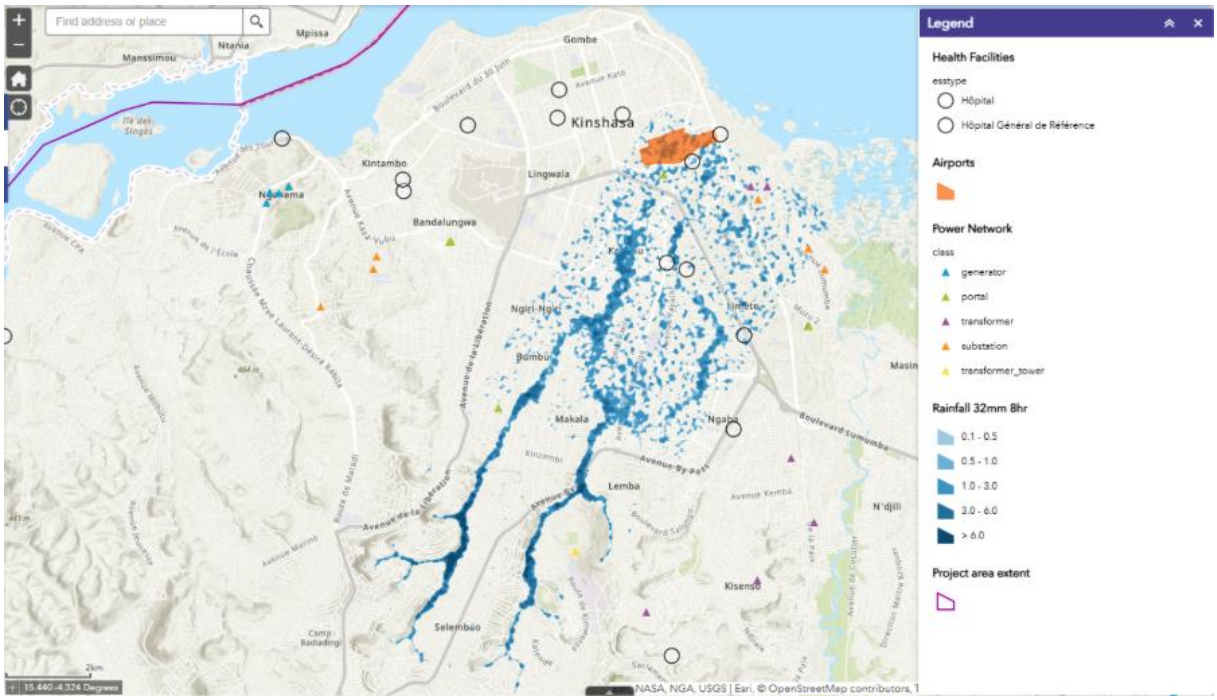

Figure 4: An example of the Kinshasa webmap portal, showing major infrastructure such as health centers, airports and the power network, overlaid with which areas are impacted by heavy rainfall.

5. Land Facilities' Automatic Feature Extraction Feasibility Study in Ethiopia

Another example of a project OS has supported on is in Ethiopia with the Space Science and Geospatial Institute (SSGI). SSGI is responsible for all geospatial data in Ethiopia, supplying other ministries and agencies with the most accurate and comprehensive datasets. This project focused on undertaking a feasibility study on the possibility of using Automatic Feature Extraction (AFE) in creating a detailed cadastral map.

As part of the Land Facility Program, SSGI requested support in developing their digital cadastral map for the country, so they could have a consistent basemap to use as a foundational dataset to append other vital geospatial datasets to. Land disputes in Ethiopia are commonplace, particularly in urban areas, and so an up-to-date cadastral map is an important tool to identify and resolve land governance disputes. However, they are often complex to develop and require a lot of manual work. This project is exploring how Artificial Intelligence (AI) in the form of Automatic Feature Extraction (AFE) of land parcels could be used as a faster alternative to traditional data capture methods. Please note, this project is due to be completed by March 2026.

5.1 Methodology

The starting point for the project was completing a comprehensive feasibility study to evaluate the potential for Ethiopia's Space Science and Geospatial Institute (SSGI) to adopt Automatic Feature Extraction (AFE) for cadastral mapping. The study examined critical factors influencing implementation, including data availability and quality, technical infrastructure, institutional capacity, and workforce skills. This assessment provided a clear understanding of the prerequisites for deploying AFE at scale across Ethiopia's diverse landscapes.

The first stage of the process was a discovery exercise aimed at establishing baseline conditions. This includes working closely with the client to identify existing datasets, assess technical capabilities, and map current workflows. This phase also explored priority use cases and capacity gaps, ensuring that the proposed solution aligns with Ethiopia's strategic objectives. Alongside working with the client, it was important to engage with key stakeholders to validate the importance of a national cadastral map and to understand the broader implications for land governance, taxation, and service delivery.

Figure 5: OS Consultant presenting on previous AFE work to SSGI officials (Photo credit Amy Wright, OS).

Building on these insights, the next phase of the project is to develop a proof of concept (PoC) to demonstrate the practical application of AFE for land parcel delineation. The PoC will provide SSGI with a tangible view of expected outputs, performance benchmarks, and operational requirements. This will be followed by the completion of a detailed gap analysis and roadmap outlining the steps needed to institutionalise AFE, including cost estimates, capability development plans, and governance frameworks. This structured approach ensures that Ethiopia can adopt AFE in a sustainable, scalable manner, unlocking efficiencies in cadastral mapping and supporting long-term land administration reforms.

5.2 Results

The project is due to conclude in March 2026, but initial findings suggest the AFE is feasible within Ethiopia with significant funding.

6. Conclusion

OS's international portfolio demonstrates the transformative role of geospatial data in driving sustainable development, resilience, and inclusive growth. By aligning its strategy with UK Government priorities and global frameworks such as the UN Sustainable Development Goals and IGIF, OS has positioned itself as a trusted partner for governments seeking to modernise their geospatial ecosystems. Through flagship programmes like GCIEP and the Land Facility,

OS delivers practical solutions that address critical challenges—from climate risk management in rapidly urbanising cities to land governance reforms that underpin economic stability and social equity.

Looking ahead, OS will continue to strengthen partnerships, scale proven approaches, and embed capacity within national institutions to ensure long-term sustainability. By combining technical excellence with thought leadership, OS remains committed to advancing geospatial innovation as a catalyst for better governance, smarter infrastructure, and resilient communities worldwide.

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BIOGRAPHICAL NOTES

Catrin Ridyard FRGS. Catrin is the International Customer Development Manager at OS, where she manages the delivery of OS international projects within the FCDO programmes, as well as the relationship between OS and FCDO. She holds a BSc in Geography, and an MSc in Environmental Modelling, and has 7 years of experience in the geospatial field, initially working as a GIS consultant before transitioning to relationship and project management. Catrin's diverse career spans both public and private sectors, and includes work in transport, environment, and health in the UK and Internationally. She is a Fellow of The Royal Geographical Society, currently applying to become a Chartered Geographer, and has

achieved a Level 7 CMI qualification in Management Consultancy as well as a PRINCE2 qualification in project management.

Andy Wilson, MCMI, FRGS. Andy has over 38 years of experience in the Geographic Information Industry, starting as a surveyor with Ordnance Survey and progressing to Head of Public Sector where he developed the Public Sector Mapping Agreement for Great Britain (which brought together over 4000 organisations under a single contract to all use the same spatial data under a common spatial reference system.) As Business Development Director for Ordnance Survey International (2014-2022), he advised government agencies globally on spatial agreements, and how these deliver economic, environmental and citizen benefits. Andy is a Fellow of The Royal Geographical Society and a member of the Chartered Management Institute.

James Norris, CGeog FRGS. James is Head of International Affairs at Ordnance Survey where he works to promote the vital role that geography and geospatial data has in transforming economies, sustaining the environment and using location insights for positive impacts. He is a Fellow of the Royal Geographic Society and is a Chartered Geographer. He joined Ordnance Survey in 2008 and has a variety of roles including corporate governance, domestic policy analysis, international policy and international relations. James currently leads OS's International Affairs activities. This includes developing, maintaining and enhancing bilateral relationships between OS and other National Mapping Agencies, representation and leadership in intergovernmental forums such as the UN and the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM). He also currently holds a leadership position within the UN-GGIM Regional Committee for Europe. Throughout his career, James has been an advocate for early career professionals and DEI initiatives across all aspects of his work.

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