

# Improving property tax revenue by using satellite imagery analysis to enhance a property database in Dakar City, Senegal

17 PARTNERSHIPS  
FOR THE GOALS



11 SUSTAINABLE CITIES  
AND COMMUNITIES



**Project lead**  
Airbus Defence and Space

**Target country(s)**  
Republic of Senegal

**Project consortium**  
N/A

**International partner**  
**New Africa Consulting, Dakar:** a specialist in developing public-private partnerships in Senegal. New Africa Consulting lead on the interaction with Dakar's Mayor's Office and the National Tax Authority.

# Property database for Dakar City

---

## Project summary

The Dakar City government has a requirement to generate revenues for developing and maintaining city infrastructure and services. The legal framework for property taxation is already in place, but the city lacks the resources to collect and maintain the information needed to calculate the tax due. The Airbus system links specific textual information such as ownership and address with location and building characteristics, including size and value; all essential data for generating municipal revenues based on property taxation. Using very high-resolution satellite data, the land and building extents (and heights) can be effectively monitored through a combination of image analysis and field data collection. Change detection through satellite imagery analysis can greatly improve the efficiency of the monitoring process.

This system will provide the framework for field teams to collect and maintain accurate property characteristics enabling tax calculations to be made within a fully operational system to support sustainable and transparent revenue generation for Dakar City. Focusing on training and knowledge transfer will ensure that future operations can be fully implemented by a local technical team.

The system will therefore be self-financing and could be rolled-out to other cities in a similar position. Local authorities are working with the National Revenue Authority to ensure that the city and its citizens will benefit from enhanced services and economic opportunities.

## Satellite solution

This project is designed to develop an operational system for creating and maintaining a parcel reference map, whose accuracy can be further improved through Global Positioning System (GPS) based field survey and mapping new buildings and changed building heights through 3D monitoring based on satellite imagery.

## Project impact

- Evidence that property tax collection can be improved.
- Identification of how improved revenue collection could be used for enhanced planning, development and maintenance of service infrastructure in key target areas, including water and drainage, citizen security, and maintenance of open spaces.
- Projected increase in job opportunities and roles created in local government by up to 20% for property data maintenance and ongoing tax collection, as well as service provision and infrastructure maintenance by 2019.

# International Partnership Programme

## **The International Partnership Programme (IPP)<sup>1</sup> is a five year, £152 million programme run by the UK Space Agency.**

IPP focuses strongly on using the UK space sector's research and innovation strengths to deliver a sustainable economic or societal benefit to emerging and developing economies around the world.

IPP is part of and is funded from the Department for Business, Energy and Industrial Strategy's (BEIS) **Global Challenges Research Fund (GCRF)**: a £1.5 billion fund announced by the UK Government, which supports cutting-edge research and innovation on global issues affecting developing countries. It harnesses the expertise of the UK's world-leading researchers, focusing on:

- funding challenge-led disciplinary and interdisciplinary research;
- strengthening capability for research, innovation and knowledge exchange in the UK and developing countries through partnership with excellent UK research and researchers;
- providing an agile response to emergencies where there is an urgent research or on-the-ground need.

The GCRF forms part of the UK's Official Development Assistance (ODA) commitment, which is monitored by the Organisation for Economic Cooperation and Development (OECD). ODA-funded activity focuses on outcomes that promote long-term sustainable growth of countries on the OECD Development Assistance Committee (DAC) list<sup>2</sup> and is administered with the promotion of the economic development and welfare of developing countries as its main objective. IPP is fully ODA compliant, being delivered in alignment with UK aid strategy and the United Nations' (UN) Sustainable Development Goals (SDGs).

**IPP seeks to use space solutions to make a positive and practical impact on the lives of those living in emerging and developing economies through partnerships with end users in the target countries to increase their capacity to respond to specific challenges.**

IPP will also contribute to the continued strength of the UK's space sector, building on the unique strengths that the sector can offer through services and technology to help with aid effort. The projects within IPP span a variety of themes, including reducing deforestation, disaster response, land-use monitoring, reducing maritime problems and renewable energy.