Towards the Sustainable Development Goals

Improving the earth observation ecosystem in the United Kingdom

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Sustainable Development Goals in the UK

Indicators

Office for National Statistics

Government Statistical Service

Reporting

UK aid

Policy

Cabinet Office

Office for National Statistics

Cabinet Office

HM Revenue & Customs

Department for Environment, Food & Rural Affairs

Department for Business, Energy & Industrial Strategy

Department for Education
UK First Voluntary National Report

74% of indicators have data (180 of the total 244) as of June 2019

Significant progress made against:
• high-quality health service;
• high and rising standards of education;
• increasing employment – women and disabilities;
• climate and the environment.

Disaggregation highlighted as a major gap in the data

UK remains committed to 0.7% GNI on development to support delivery of the Goals
Earth Observation in the UK

Satellite Applications Catapult

Data Science Campus

Academia

Commercial Suppliers

Centre of Excellence

Cross Government Expert Group - UK EO Policy
Joint project between OS and Ordnance Survey

Aiming to identifying the proportion of vegetation for urban residential gardens in Great Britain.

Used remote sensing and machine learning techniques with high-quality aerial and satellite imagery

Developed a tool able to classify the contents of an image with accuracy – a neural network classifier

estimate that 62% of garden space is vegetation.

In urban areas this drops to between 45% and 54%
Future-proofing of arabica coffee production in Ethiopia

Arabica coffee is a critically important crop for Ethiopia and worldwide. Coffee as a whole it the second most traded commodity after oil.

Kew’s research has been fundamental in understanding climate change threats and opportunities for this species, and particularly in Ethiopia.

The outputs from the research include: (1) rigorous assessment of risks and opportunities for wild and farmed Arabica in Ethiopia; (2) documents and resources for decision makers; (3) resources and analyses for intervention planning and action.

Impacts:
- NGOs in Ethiopia are making decision on where and when to invest
- Ethiopian government is putting in place strategies for coffee production until 2100, based on Kew’s science data and expertise
- The science is now taught at Universities
- First set of Coffee Atlas sold out
Cefas’ earth observation case study: Commonwealth Marine Economies Programme - Pacific

UK Government programme in Caribbean and Pacific Small Island Developing States.

Supports sustainable initiatives to promote marine economic growth and prosperity.

Key Pacific issues include marine pollution and human health impacts, climate change and blue carbon potential (mangroves and seagrass).

Pacific: Earth observation for pollution and blue carbon

Combine:
- EO (satellites/drones)
- In-situ monitoring
- Ocean modelling

Monitor on local and national scales
Assess current situation, explore future scenarios

Assessing blue carbon habitats using satellite data: seagrass habitat map (left) of Efate Island, Vanuatu, derived from satellite colour data (right; false-colour image).
Enable all governments to collect, use and share geospatial data on population, settlement and infrastructure

- Infrastructure mapping
- Validation of admin boundaries
- Comprehensive, systematic identification of settlements
- Population modelling

- Inform service delivery
- Improve national sampling frames
- Map & disaggregate SDG indicators
- Hybrid census, where needed
Counting cattle using high resolution imagery

Estimate the post-war economy in South Sudan

Triangulate ground surveys and tether counts

Analysis options:

• Feature extract heads of cattle
• Feature extract herds of cattle and estimate based on density and distribution pattern
• Identify change between an image with cattle and an image without

Collaboration between ONS and DFID using the Data Science Campus
Potential to underpin a greater exploitation of EO data across DFID’s range of programmes
Africa Regional Data Cube

Decades of analytically ready data allowing easily accessible geospatial analysis. Initial focus on algorithms to address priorities identified by 5 countries:

Ghana | Kenya | Senegal | Sierra Leone | Tanzania

20+ algorithms & 17+ years of data

- Cloud-free Mosaics
- Spectral Indices
- Land Classification
- Water
- Land Change
<table>
<thead>
<tr>
<th><strong>Deforestation / land use</strong></th>
<th><strong>Deforestation prevention</strong></th>
<th><strong>Forestry Management And Protection (FMAP) system</strong></th>
<th><strong>Forests 2020</strong></th>
<th><strong>Land-use interventions</strong></th>
<th><strong>Peatland Assessment in SE Asia by Satellite (PASSES)</strong></th>
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<td>Indonesia, Colombia, Ghana, Kenya</td>
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<td>Modelling Exposure through Earth Observation Routines (METEOR)</td>
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International Partner Programme

32 Projects
33 Countries
15 Goals
Growing the use of earth observation: Challenges

- National variation
  - Lack of methods
  - Lack of capability
  - Cost of commercial imagery
- Quality – input and output
- Data sharing
- Lack of EO infrastructure
- Funding for earth observation
Growing the use of earth observation

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EO4SDG/IAEG-SDG

UN Global Data Platform

WB Trust Fund
Conclusion

Need more consideration of earth observation capability as an end-to-end process rather than just developing methodology and storage

UK should work towards collaborative test-beds for earth observation projects rather than siloed projects

Greater support is needed for technical infrastructure – difficult as tied to organisation specific architecture

How do we work collaboratively across other spheres of influence – statistical agencies, development agencies, geospatial agencies etc

FOCUS ON IMPACTS AND OUTCOMES
ANY QUESTIONS?