



Promoting Cooperative Solutions for Space Sustainability

Benefit on Earth: space applications supporting the Sustainable Development Goals

Krystal Wilson
Secure World Foundation
May 6, 2019

Sustainable Development Goals

SUSTAINABLE DEVELOPMENT GOALS



Sustainable Development Goals & Space



**EARTH OBSERVATIONS AND GEOSPATIAL INFORMATION:
SUPPORTING OFFICIAL STATISTICS IN
MONITORING AND ACHIEVING
THE 2030 AGENDA**



Space for
Sustainable Development

Satellite Communications For Sustainable Development

About ESOA

The European Satellite Operators' Association was formed in March 2002 to represent the interests of the industry with the European Commission, Parliament, Council and the European Space Agency as well as other international organisations, national governments and regulators. ESOA's goals include ensuring that satellites benefit from the appropriate political, industrial and regulatory environment to fulfil their vital role in the delivery of communications. ESOA is governed by a Board of Directors made up of the CEOs of its Member Companies.

The activities and other details about the ESOA can be found at www.esoa.net. Members of ESOA are: EADS SPACE Services, Eutelsat, HellasSat, Hispasat, Inmarsat, SES New Stars, SES Sines, SES GLOBAL, Telecel Broadcasting Holding and Telespazio. Aranespace, EADS SPACE and International Space Builders are Supporting Members of ESOA.

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Satellite
Communications
For Sustainable
Development



Development of the world's poorest countries is empowered through access to communications technology. The European Satellite Operators' Association (ESOA) represents an industry that delivers these critical services in Africa and the developing world.



**GLOBAL PARTNERSHIP
FOR SUSTAINABLE DEVELOPMENT DATA**

Report 59
June 2016

Stefano Ferretti
Jörg Feustel-Büchel
Roy Gibson
Peter Hulst
Andreas Papp
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SUSTAINABLE DEVELOPMENT GOALS



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Technology News / News-Analysis

National space agencies of Asia-Pacific countries look to develop satellites in collaboration

News-Analysis | IANS | Nov 17, 2017 23:12 PM IST

In a first-of-its-kind initiative, the national space agencies of the Asia-Pacific region are looking to collaboratively develop small and cube satellites, a senior Indian space official said on Friday.



Heads of space agencies from 10 countries in the region along with various government bodies had come for a session of the Asia Pacific Regional Space Agency Forum was held here from 14-17 November.

At the forum, working groups with space representatives



GIS & Maps Earth Observation GNSS & Positioning LIDAR Location Tech UAVs BIM & Modelling

Home » Blogs » Observing the Earth, Fueling Global Development Solutions

Observing the Earth, Fueling Global Development Solutions

By Anne Hale Miglarese | April 3, 2018

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Radiant.Earth's mission is to make [Earth observation \(EO\)](#) imagery and data available to discover, analyze and apply for unique insights to the issues the global development community encounters daily. The science of remote sensing and the Earth observation marketplace is evolving rapidly given the innovations of cloud computing, machine learning and big data.



Home / Latest News

Space essential for meeting South Africa's economic and social development goals



The New Times

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NEWS

Rwanda looks to deploy satellite tech to monitor progress on SDGs

Rwanda is currently readying itself for satellite technology as one of the key tools to monitor implementation of the Sustainable Development Goals (SDGs) in the country.

By Athan Tashobya | Published: March 13, 2018



How do we take advantage of trends in space for the SDGs?

Primary “industry” focused on assisting the developing world

- What is it?
 - Long-term solutions to problems by working to improve economic, political and social systems in sustainable way
- How is it carried out?
 - Project lifecycle: planning, implementation, monitoring & evaluation
- Who are the stakeholders?
 - Governmental organizations, intergovernmental/multi-lateral/regional organizations, private donor entities, non-governmental organizations, contracting companies, developing country governments, space agencies, manufacturers and operators

Who are the decision makers?

- No SDG contains goals that weren't already being worked on by professionals around the world
- Need to define and think broadly from citizens to organizations to governments
- Most potential end users are unaware of the possibilities

How are we delivering it?

- What happens when a potential end user googles their specific topic?
- Who isn't represented in this room?
- Are resources being developed that can be understood and acted upon by other professions?



Why this technology?

- Low or high resolution imagery
 - Combined with GPS, GIS
- Changing industry and capabilities
- Accessing difficult areas
- Common use cases
 - Disaster management, agriculture, climate change
- Broadening use cases
 - Endless possibilities

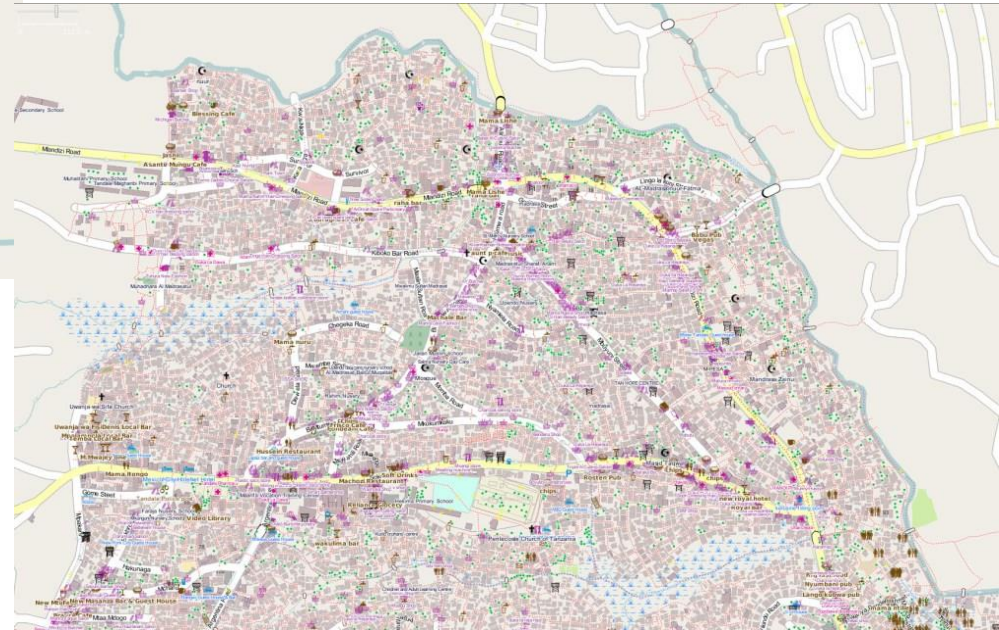
Combining Earth imagery with GIS and GPS technologies and local field data

- Dar Ramani Huria project in Dar es Salaam, Tanzania
- Successful project with demonstrated results



Results: Community Mapping Initiative

Tandale ward before and after mapping



Applying digital change detection techniques to small-scale projects

- Semi-automatic detection techniques to ascertain illegal charcoal production sites in Somalia
- Normalized Difference Vegetation Index (NDVI) methodology to assess projects in rural Tanzania

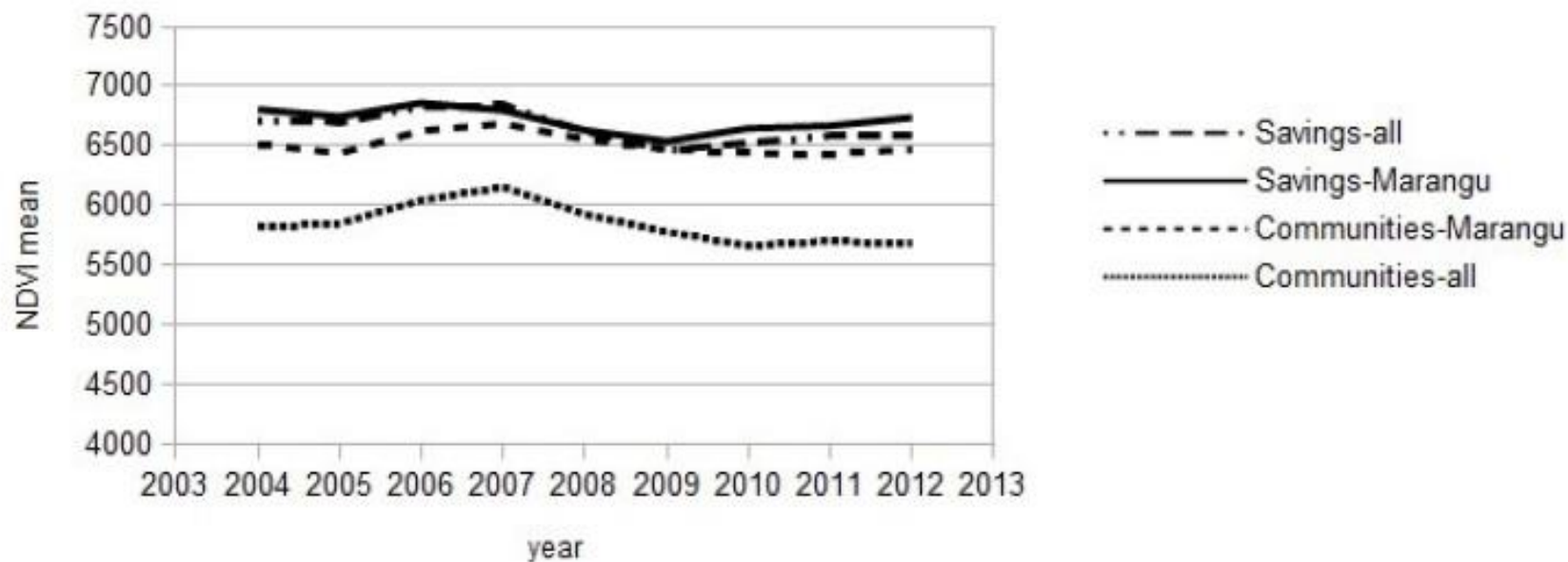


Results: Small-Scale Forest Degradation

Analysis of Tanzania data

Figure 3: NDVI annual mean

based on rolling averages



Source: Morikawa²

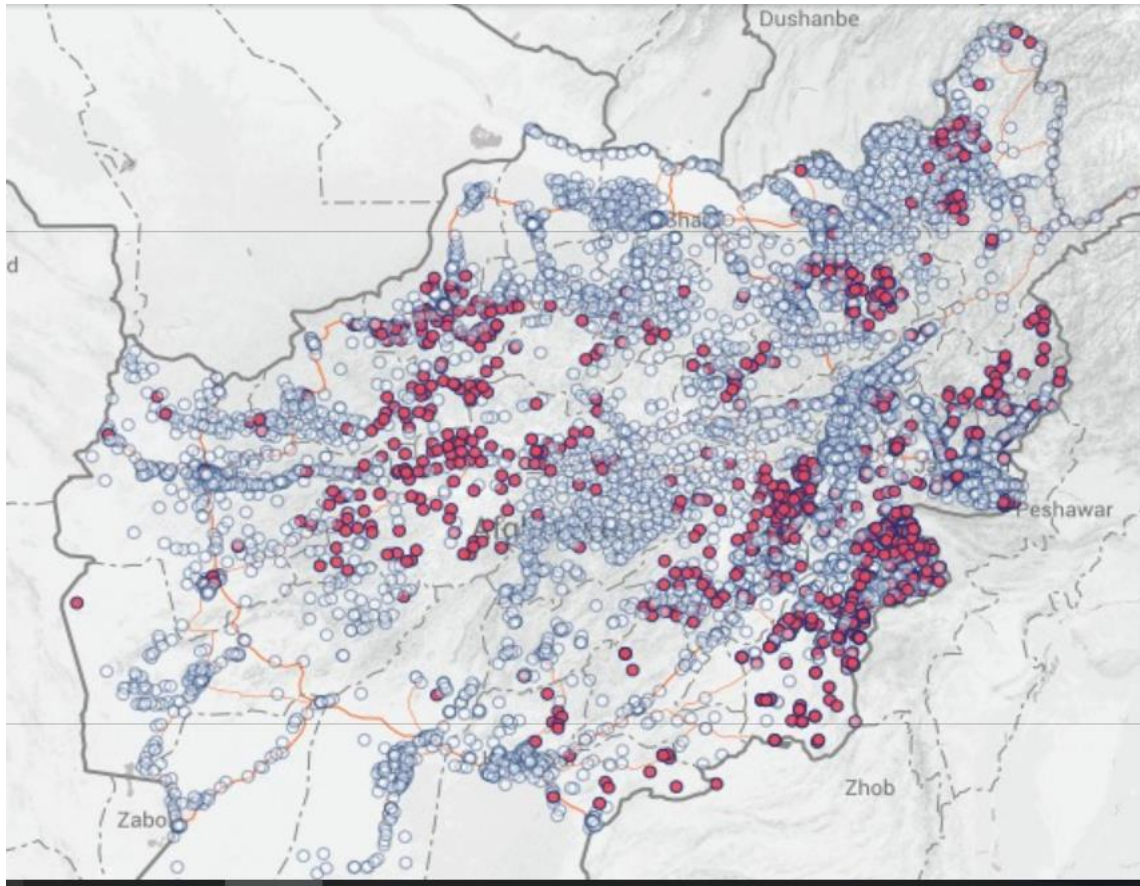
Using remote sensing in democracy & governance

- Potential for application at every stage of project lifecycle
- Support for free and fair elections



Results: Afghanistan Elections 2014

Location of audited polling stations



Source: Afghanistan Open Data Project⁴



Promoting Cooperative Solutions for Space Sustainability

Secure World Foundation (SWF)

- Secure World Foundation *is a private operating foundation* that promotes cooperative solutions for space sustainability
- **Our vision:** The secure, sustainable and peaceful uses of outer space contributing to global stability and benefits on Earth
- **Our mission:** SWF works with governments, industry, international organizations and civil society to develop and promote ideas and actions for international collaboration that achieve the secure, sustainable, and peaceful uses of outer space for the socioeconomic and environmental benefits to Earth

Activities and Partners



UNITED NATIONS
Office for Outer Space Affairs



INTERNATIONAL
ASTRONAUTICAL
FEDERATION



SPACE GENERATION
ADVISORY COUNCIL

Connecting with Secure World Foundation

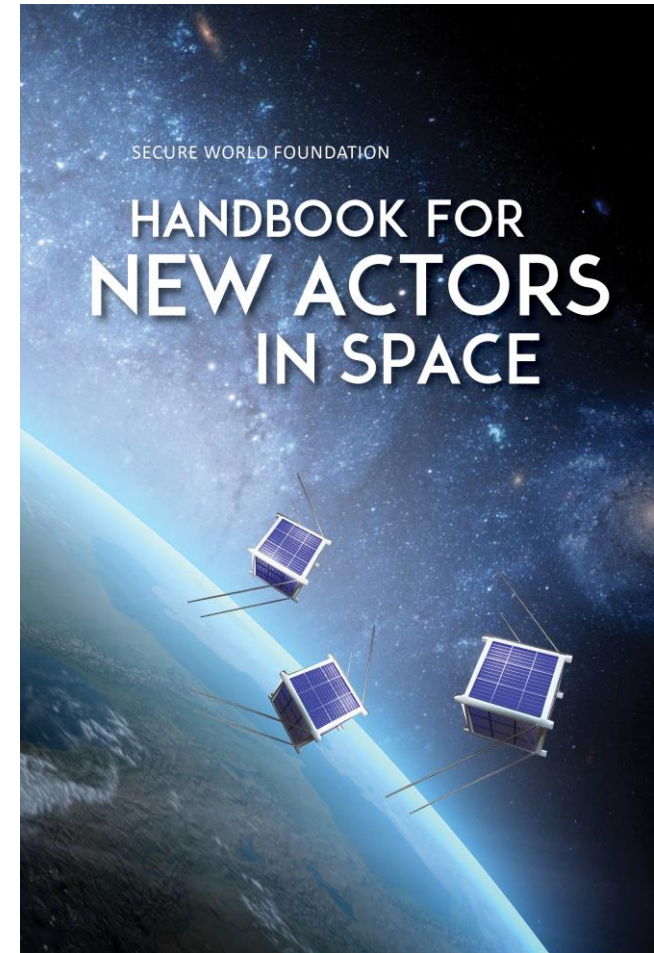
The Summit for Space Sustainability will be a high-level multi-day event focused on developing solutions for space sustainability. It will encompass a cross-section of space sustainability issue areas, including:

- Space debris
- Space situational awareness
- Space law and policy
- Space governance
- National and international space security
- Use of space for human and environmental security on Earth



SWF Handbook for New Actors in Space

- **Goal:** Create a publication that provides an overview fundamental principles, laws, norms, and best practices for safe, predictable, and responsible activities in space
- **Two specific audiences:**
 - Countries developing space programs and/or having to oversee and regulate their first satellites
 - Universities and start-up companies that are developing/operating satellites
- **Electronic copies** are available through the SWF website, free of charge:
www.swfound.org/handbook

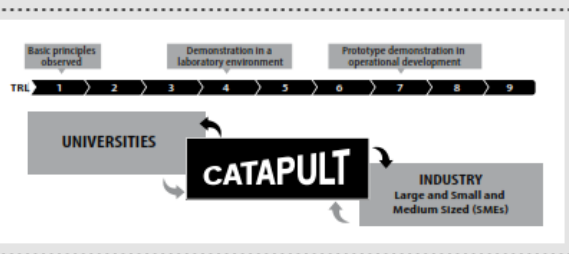


- **Chapter 1** – International framework
- **Chapter 2** – National policy and administration
- **Chapter 3** – Responsible space operations

Case Study:

The United Kingdom Satellite Applications Catapult

The United Kingdom Satellite Applications Catapult was established by the government of the United Kingdom (UK) in May 2013 with the goal of creating economic growth in the UK through supporting the development, commercialization, and use of satellite applications. According to its Delivery Plan 2015–2020, the Catapult (Figure 8) aims to promote satellite application and technology development and to help domestic industry “bring new products and services more rapidly to market.” The Satellite Applications Catapult is one of 11 “Catapults” operating in the UK, each focusing on different technologies and application areas. The Catapult operates as a private, not-for-profit research organization. It is governed by a board, which includes representation from the United Kingdom Space Agency (UKSA) and from Innovate UK—a government agency focused on fostering technology and economic development.



IN-DEPTH ANALYSIS: REMOTE SENSING POLICY AND ADMINISTRATION

Remote sensing satellites have continually sensed Earth for more than four decades, yielding a valuable repository of data about the planet which has applications in areas as far-reaching as health, climatology, and urban planning. Given its strong linkages to socioeconomic development, space-based remote sensing is a key area of activity for new and established space actors alike. In light of this, remote sensing is a useful case study highlighting the interaction between public policy and public administration and illustrates some of the approaches different countries have taken to managing this kind of activity. Additionally, new trends in remote sensing activities, especially by non-governmental actors, illustrate larger policy transformations that are useful for new space actors to consider.

Remote Sensing Policy

Consistent with the main elements of public policy described in the beginning of this chapter, remote sensing policies primarily seek to:

- identify objectives and priorities guiding the acquisition of data about the planet;



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Thank you. Questions?

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