



“Space Assets and the Sustainable Development Goals”

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In cooperation with Krystal Wilson

Breakout Session #2 - Space Society

Monday, November 21, 2016

United Nations/United Arab Emirates High Level Forum

“Space as a Driver for Socio-Economic Sustainable Development”

20-24 November 2016

Dubai, United Arab Emirates



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Building on the overall success of the Millennium Development Goals, the 2030 Agenda for Sustainable Development includes an ambitious set of new goals to create a better future for the entire world. These goals are broader in scope, more specific in targets, and shift from addressing the effects of globalization to focusing on sustainability, with sustainability defined as the idea of development efforts that meet the ongoing needs of the present and the future. This focus on sustainability is a good reminder that we must be broad in our thinking of how space can bring about benefits on Earth. The Sustainable Development Goals are a heavy lift to achieve, and it's critical we examine the full range of how space technologies can contribute to their success.



- Sustainable Development Goals (SDGs)
 - Renewed interest
 - Technology seen as key resource
 - Variety of actors & industries



How can remote sensing and geospatial technologies help?

Space assets and technology can help us implement the Sustainable Development Goals in certain and clear ways, and in tangential and subtle ways. Additionally, implementing the Sustainable Development Goals is not just the work of the United Nations, nor UN Member States alone. It is a shared task of a wide variety of actors, many of whom remain unaware of the many ways space technology can help them achieve their diverse projects.

From the very inception of the Sustainable Development Goals, space technologies have been viewed as integral for their achievement. In Paragraph 76 of the 2030 Agenda, signatories agreed to “*promote transparent and accountable scaling-up of appropriate public-private cooperation to exploit the contribution to be made by a wide range of data, including earth observation and geo-spatial information.*”



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Consequently, GPS, weather data, and satellite communications are all critical on the logistical side of carrying out sustainable development projects. But Earth observation, in particular, can provide unique benefits to projects supporting the SDGs. Earth observation satellites provide an unique source of information for anyone planning, carrying out, or evaluating sustainable development projects. By showing a series of images over a period of time, they can help reconstruct a sequence of events. High resolution images can be used for investigating highly targeted phenomena with a narrow field of vision during a specific timeframe. Low resolution imagery is better at depicting regional phenomena that may require more systematic and repetitive collection.



Taken together with other geospatial technologies such as GIS and GPS, remote sensing data will be crucial for finding solutions to the SDGs. This diversity of utility highlights an important point—that space assets can be used to support all of the SDGs, not just those where their employment is already common.

Furthermore, observation and analysis can be done in a non-intrusive, objective, and repeatable manner providing for more fair and equitable decision-making. This last point should be highlighted—there are many technologies that will be helpful in achieving the SDGs, but most suffer from not being able to be used in an unbiased, across-the-board manner.

When looking at how space can benefit sustainable development, we often talk about projects on disaster prediction and management, land use, and climate change activities. For instance, the European Space Agency and the World Bank have a partnership currently to incorporate Earth observation data in 18 different projects—all of which are large-scale resource management projects. There is also a lot of interest in incorporating Earth observation data into country-level efforts to monitor progress on the SDGs.

While these uses of remote sensing data are the important, even primary, areas of focus for global efforts to use Earth observation for in support of the SDGs, I want to highlight the importance of smaller scale projects and day-to-day development practitioners that can also benefit from the use of Earth observation data. We need to ensure that all relevant actors are part of the discussion of how to increase the use of space technology for sustainable development.

A core feature of the SDGs is their focus implementation and accountability. Though the SDGs are not legally binding, all signatories agreed to build out national frameworks for their achievement and for monitoring progress. Yet, the goals are not meant to be achieved by state action alone and will require the commitment of many international actors working in a variety of innovative ways. The field of international development, defined as projects based on official and private development funding, is particularly important for understanding how the goals will be met. Space actors need to take careful effort to understand this field in order to contribute to the fullest extent possible.



International development projects are typically carried out as a partnership between the funding organizations, implementing companies or non-governmental organizations (NGOs), and local partners and government officials—whose knowledge of space and its potential contribution are often minimal. Yet, this project structure can also be an important avenue for the transfer of knowledge and skills related to Earth observation in an efficient and cost-effective way. Earth observation technologies and data can potentially be used by all stakeholders and at every phase of the project lifecycle.

Shifting focus, I'd now like to highlight a few examples across the spectrum of the SDGs and their supporting actors.



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



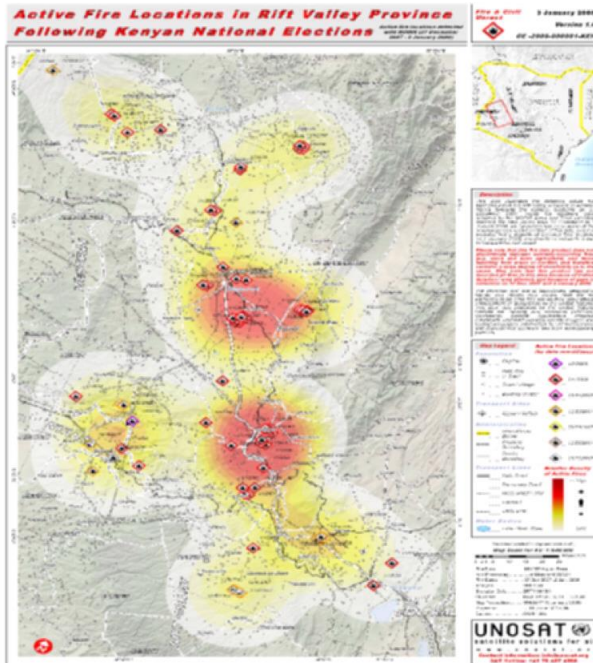
One primary purpose of many of the SDGs is to improve the lives of the most marginalized populations in developing countries. Earth observation data can be useful tool when planning for these rural development projects—everything from designing micro-electric grids to poverty assessment mapping to healthcare infrastructure mobilization. Better planning means international development investment funds will be used more efficiently by providing decision-makers and project planners with much-needed information and reducing on-the-ground costs.

Earth observation is often used for government or international efforts to monitor land use, including tracking deforestation. But the same data be can be used in a much more granular way with immediate effects. In Somalia for instance, researchers have used space data to help map and estimate illegal coal production sites as well as to evaluate the results of sustainable agriculture and forestry training programs.

Finally, let's look at another less obvious application of Earth observation data to SDG #10 on Reducing Inequalities and SDG #16 on Peace, Justice and Strong Institutions. To be successful, sustainable development efforts to improve living conditions must include a focus on promoting effective governance and accountable institutions. Support for free and fair elections is a key component of that strategy. Earth observation data could be incorporated at every stage of these types of projects.

For instance, satellite imagery and maps could be used pre-election to improve the logistics and planning of elections in developing countries. It could be used to conduct an informal census in rural areas to confirm official numbers and inform better distribution outreach efforts. It could assist in setting election district boundaries and polling station locations to maximize potential voter turnout. Weather and topography information can help in figuring out when to hold an election in countries or regions that experience extreme weather or have difficult terrain. Simply getting elections materials to remote areas can be difficult, and satellite data could be used to improve those efforts.

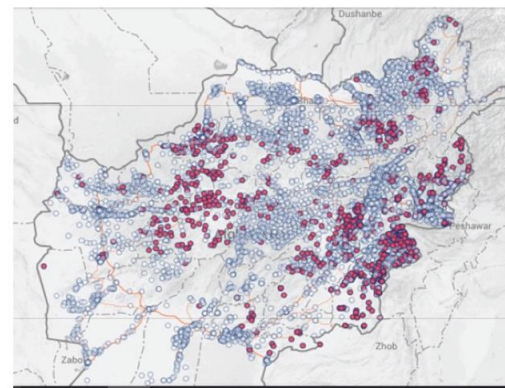
Democracy and Governance



Source: UNOSAT

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Source: Afghanistan Open Data
Project

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As seen in slide 5, remote sensing data has been used to document the election itself and improve public confidence in outcomes. Such documentation can confirm how whether a polling station was actually open and to estimate voter turnout. This impartial data has even been used to track election-related violence.

Despite general recognition that Earth observation and geospatial technologies will be critical for achieving the SDGs, challenges remain for wider adoption. Cost and licensing, technical capacity within the field of international development, data and access limitations, and donor skepticism are all factors limiting how space technology will be used by those seeking to achieve the SDGs. These examples highlight just a few ways that space technology can creatively be brought to bear on sustainable development--the possibilities are limitless.



One of the most important steps needed to promote increased use of Earth observation data is improving cross-sector dialogue between the various stakeholders of international development and the space community. All international development practitioners need more awareness of the usefulness of Earth observation data and additional resources for making use of it. This is not to say that the majority of resources shouldn't be focused on supporting the goals most closely aligned with Earth observation data; however, it's important that resources be provided in an open, accessible manner for all who might benefit.

Space technology needs to be integrated into the common sources of information used by the daily practitioners and decision-makers in the field of international development. OOSA should continue to use its Programme on Space Applications to provide capacity-building, education, research and development support and technical advisory services—remembering that there are many actors and projects who can take advantage of these resources.

We also need to encourage better linkages between the UN system and other groups working to bring space technology to bear on the SDGs, such as the Group on Earth Observation, national aid agencies, and private donors. Only by sharing resources, maintaining open dialogue, and increasing synergies among various efforts will we be able to have a meaningful impact on these global problems.



Promoting Cooperative Solutions for Space Sustainability

Thank you. Questions?

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November 20-24, 2016

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