GIS for Sustainable Development
Tuesday, March 20 | 1:45 – 2:45 pm
Agenda & Presenters

- Welcome – Brendan O’Neill, Esri
- Overview of GIS for Sustainable Development – Salim Sawaya, Esri
- User Case Studies
  - Planning Effective Programs – Brian Bakker, US Agency for International Development
  - Monitoring & Evaluation – Serge Adjognon, The World Bank
  - Engaging Stakeholders – Hannah Wilber, Esri Story Maps Team
- Summary and Q&A
THE SCIENCE OF WHERE

A Framework and Process

Data Management & Integration
Visualization & Mapping
Analysis & Modeling
Planning & Design
Decision Making
Action

Understanding
Predicting
Collaborating
Informing

Transforming How We Think and Act . . .
. . . Creating a More Sustainable Future
The International Development Program Cycle

Project Life Cycle – Core Funding Institutional Support
Decision Support
Gain situational awareness, and enable information-driven decision making

Analytics
Discover, quantify, and predict trends and patterns to improve outcomes

Data Management
Collect, organize, and maintain accurate locations and details about assets and resources

Field Mobility
Manage and enable a mobile workforce to collect and access information in the field

Monitoring
Track, manage, and monitor assets and resources in real-time

Mapping & Visualization
Understand locations and relationships with maps and visual representations

Design & Planning
Evaluate alternative solutions and create optimal designs

Decision Support
Gain situational awareness, and enable information-driven decision making

Constituent Engagement
Communicate and collaborate with citizens and external communities of interest

Sharing & Collaboration
Empower everyone to easily discover, use, make, and share geographic information

ArcGIS | Common Patterns of Use
Planning Effective Programs
Brian Bakker, US Agency for International Development
Integrating Geospatial Technology into USAID’s Program Cycle

USAID GeoCenter
On behalf of the American people, we promote and demonstrate democratic values abroad, and advance a free, peaceful, and prosperous world.

In support of America's foreign policy, the U.S. Agency for International Development leads the U.S. Government's international development and disaster assistance through partnerships and investments that save lives, reduce poverty, strengthen democratic governance, and help people emerge from humanitarian crises and progress beyond assistance.
Poverty Has Been Cut in Half

1990

2013

Source: World Bank
How do you find and reach that last person?
USAID GeoCenter

The GeoCenter applies geospatial technology, creates new data and builds mapping expertise to solve international development challenges.
USAID Program Cycle
Integrating GIS into the Program Lifecycle

Where is the need the greatest?

Where are we already working?

What region or geography should the project target?

Is a project more effective in one place vis-à-vis another?

What geographic data should be collected?

How could geographic analysis be integrated into an activity?
Vulnerability in Malawi was highest in the south. Shocks are disruptions to household income or subsistence, as reported by the household itself. Many households experienced five or more discrete shocks in 2013-14. The single largest shock was food prices, followed by agricultural shocks, which included crop failure and high input prices. Total shocks include the complete range of shocks reported by a household across all categories, including food price, agriculture, hazards, health and others.

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<tr>
<th>Total Number of Shocks Experienced by Households</th>
<th>2 The Interconnected Nature of Shocks</th>
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**Shocks in Malawi are interrelated.**

The mix of shocks across geographic space in the map on the left shows the geography of vulnerability.

Shocks can be co-variate, meaning they happen to all households across a geographic space, or they can be idiosyncratic, meaning that the shock is specific to a household.

In Malawi, co-variate shocks include natural hazards and food prices, while idiosyncratic shocks include health, financial, and conflicts.

**What Matters Most?**

These factors contribute to whether or not a household is vulnerable to any shock, from agriculture and hazards to food prices and health.

- **Education**
- **Distance to a Road**
- **Gender**
- **Livestock Holdings**
- **Household Size**
- **Access to Land**
- **Marital Status**
Where are things going?

- International development community = late adopters
- Challenge: Lack of consistent foundational data across countries
- Starting to catch-up

- The perfect storm for growth:
  - Interest in the “Data Revolution”
  - Mobile data collection makes it easy to georeference survey data
  - New unimagined data sources + increased access to existing data sources
  - Computing hardware, software, and approaches create new opportunities for analysis
Thank you!

geocenter@usaid.gov

http://geocenter.digitaldevelopment.org
Monitoring & Evaluation
Serge Adjognon, The World Bank
Leveraging Geospatial Technologies to Monitor and Evaluate Sustainable Forest Initiatives: Impact Evaluation of the Burkina-Faso Forest Investment Program (FIP)

Guigonan Serge Adjognon
Development Impact Evaluation (DIME) / Development Economics Research Group (DECRG)
World Bank Group

GIS for Sustainable Development
Federal GIS Conference 2018
Tuesday, March 20, 2017
About DIME

Identify problems

Test alternatives

Adopt solutions

...as simple as that!
Global outreach

5 regions
60+ countries
+170 IEs
300 partners
Burkina Faso forests are representative of the **dry forests of Africa** that are home to almost 235 million rural people and cover **over 43%** of the land surface of the continent.

Halting deforestation central in international climate policies (ex. REDD+ gaining popularity since 2015 Paris Agreement)

FIP supports developing countries efforts to REDD+ Burkina Faso unique case amongst early wave of 8 pilot FIP countries

Burkina Faso FIP has 2 main components:

(i) **the Gazetted Forest Participatory Management Project for REDD+ (PGFC/REDD+) led by the AfDB**

(ii) **the Project for the Decentralized Management of Forests and Wooded Areas led by the World Bank (the French acronym is PGCFEB)**
Aerial images taken from Burkina Faso forests
Burkina Faso Forest Investment Program (FIP): 12 out of the 77 gazetted forests

- Goal of PGFC/REDD+: to **improve carbon sequestration capacity of gazetted forests** while reducing poverty in rural areas.

- PES in Burkina Faso: communities are offered financial incentives conditional on engaging in forest conservation activities.
  - Reforestation (primarily)
  - Avoided deforestation

- The Burkina Faso FIP covers 12 **gazetted forests** distributed in 31 communes and 4 administrative regions
How is PES meant to work?

• Provide monetary incentives to address externality-related issues of management of natural resources

• However, community payments may result in free-riding. How to adapt model to strengthen incentives?

• We are testing alternative PES contracts to evaluate their relative effectiveness during reforestation activities

• Yearly reforestation campaigns in Burkina Faso PIF forests

**Key outcome of interest:**
Average number of trees still alive a year after the reforestation campaign on the parcel
Baseline Planting: Geocoding Activities using Survey123 by ESRI

Plot with 434 trees planted
Plot with 152 trees planted
Plot with 32 trees planted

Tissé forest zoomed area

33,547 trees planted overall
REFORESTATION CAMPAIGN 2017 – 1330 TREES WERE PLANTED ACROSS 3 PLOTS IN TIOGO FORESTS, KYON BLOC

Tiogo is one of 11 forests that were subjects to reforestation activities during the 2017 campaign. We counted overall 33,547 trees planted across the 11 forests in August 2017.
Plan to measure trees survival rate using ESRI Collector

Tree ID: 934857
Tree type: Baobab
Location: 3.12, -1.05
Date: 15/09/17
Is the tree still there?

Yes ☐
No ☐
PES contract signing!

THANK YOU !
Engaging Stakeholders
Hannah Wilber, Esri Story Maps Team
Engaging Stakeholders with Storytelling & GIS

Hannah Wilber
Esri Story Maps
Discussion and Q&A
Get started

- Tutorials
  - learn.arcgis.com
  - doc.arcgis.com
- Esri’s Nonprofit/Conservation Programs
- Meetups (DC, New York, Geneva)
- Webinars
- Come visit us at our booth (near the lunch area)
Print Your Certificate of Attendance
Print stations located in the 140 Concourse

Wednesday’s Agenda

9:30 am – 10:30 am
Keynote Speakers
Susan M. Gordon, Principal Deputy Director of National Intelligence
American Red Cross
Hall C, Lower Level

10:30 am – 5:15 pm
GIS Solutions Expo - Sustainable Development Neighborhood
Hall B

6:30 pm – 9:00 pm
Networking Reception
Smithsonian National Portrait Gallery
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Select the session you attended

Scroll down to find the feedback section

Complete answers and select “Submit”