

http://modi.mech.columbia.edu/nycenergy



WFEO and ASME @ Rio+20

Vijay Modi, Mechanical Engg. School of Engineering and Earth Institute *Columbia University* SG task force on Sustainable Energy for All

June 16th 2012



Partnerships

- KNUST, Ghana
- ASER and SENELEC, Senegal
- KPLC, Kenya
- Ministry of Mines/Minerals/Energy Liberia
- Nirma Institute of Technology, India
- Birsa Institute of Tech., Ranchi, India

Examples of bottom-up needs

- what is where. Is it functioning? tools for surveys/assessments, assisting CHW,
- Visualizing information, from local to national
- Systems for analysis and decisionsupport
- Systems for monitoring, control, payments for services....

Alternatives to paper surveys

- Mountains of paper... slow to move
- Data would become available years later in some aggregated form, useless for planning, only good for counting problems

Problem: starts with paper-based collection



#1: the mobile phone.

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formhub.org

a data collection tool



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ODK Collect > tutorial

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1. What is your name?

Andrew





Nigeria- example

- 30,000 health, educ, water facilities surveyed (photos, georef, facility status, staffing).....
- Formhub tool emerged out of this effort
- Now used recently by Nigeria without our support to enumerate + map the entire country within a few weeks

• Do not need to "reinvent the wheel"



Powered by Leaflet - Terms & Feedback Map data (c) OpenStreetMap contributors, CC-BY-SA





Health Facility w/ any Functional power



formhub.org

Infrastructure planning challenge

- Do not know well where people live
- Censuses are not geo-referenced
- Single census tract could be hundreds of sqkm

- Can satellite data be used in rural areas?
- Can we recognize households and local setellement sizes and density?



people live was not obvious from census data





Rooftops selected by an algorithm from QuickBird Image



Sources:

- Millennium Villages Project, Tiby, Mali

- Millennium Villages Project Infrastructure at The Earth Institute, Columbia University



















Cell phone towers



Telecom operators have low asset utilization 20 kW captive capacity to meet 3 kW demand What does this mean?

10 Consumer System: Metering + Communications

Meter Enclosure

Version 1: 40 cm x 30 cm x 20 cm

Version 2: 15 cm x 7 cm x 7 cm

Links

http://formhub.org

http://october.mech.columbia.edu

http://gateway.sharedsolar.org

Thursday, April 7, 2011

Some thoughts

- Engineers need to spend a lot more time listening & learning....EMPATHY
- Need for the engineering equivalent of CHW or AgExtn, 1 or 2 yr diploma?
- Leverage monitoring systems
- Open source tools that transfer decisionsupport tools and technology not just final results, consulting services and products

NYC Lab

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India Lab

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