Geospatial Information technologies and the challenges of urbanization: Perspectives from the World Bank

- *Presented at the " Sustainable Cities and Human Settlements," Urbanization: Challenges and Solutions" session of the Third High Level Forum on UN Global Geospatial Information Management (UN-GGIM),*
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1. Re-organization of The World Bank Group

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3. Use of Geospatial Information Technologies in WB projects in Client Countries

   • Urbanization, land admin., multiple sectors

4. Public Dissemination and Awareness

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1. The World Bank Group

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International Bank for Reconstruction and Development (IBRD)	1944	→ **THE WORLD BANK** IBRD · IDA | WORLD BANK GROUP
International Development Association (IDA)	1960	

Over 10,000 employees

Over   5,000 consultants

120 country offices

IFC International Finance Corporation WORLD BANK GROUP   1956

The Bank's twin goals

ICSID INTERNATIONAL CENTRE FOR SETTLEMENT OF INVESTMENT DISPUTES   1966

Ending Poverty & Boosting Shared Prosperity

MIGA Multilateral Investment Guarantee Agency WORLD BANK GROUP   1988

Part of the United Nations (UN) System

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# How The World Bank is organized

- Six Regional VPs
  (AFR, EAP, ECA, LCR, MENA, SAR)
  - Country Management Units
    with Country Director

- 14 Global Practices &
  5 Cross Cutting Solution Areas
  - Technical content of projects
  - Several units led by Practice
    Managers

- Corporate Departments

  Office of the Chief Economist:
          Research, Development Data
  ICT Department (GIS expertise)

ECA

MENA

LCR

AFR

SAR

EAP

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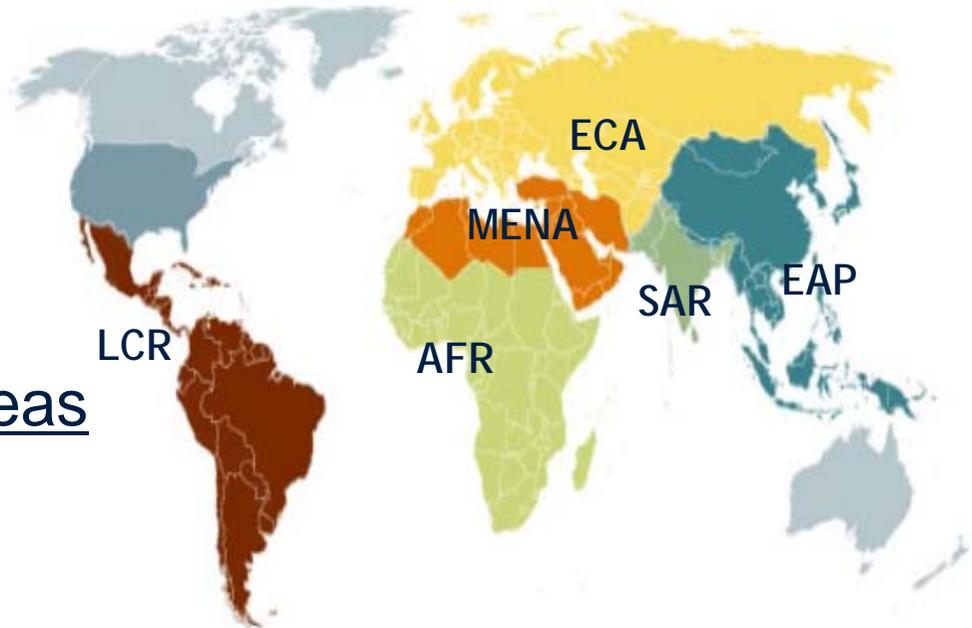
Global Practices (GPs) and Cross-cutting Solution Areas (CCSAs)

Since July 1, 2014

GPs (14)

- Agriculture
- Education
- Energy & Extractives
- Environment & Natural Resources
- Finance and Markets
- Governance
- Health, Nutrition & Population
- Macroeconomics & Fiscal Management
- Poverty
- Social Protection & Labor
- Trade & Competitiveness
- Transport & ICT
- Social, Urban, Rural & Resilience → Global Land, Rural & Geospatial Unit
- Water

CCSAs (5)

- Climate Change
- Gender
- Jobs
- Fragility, Conflict, and Violence
- Public-Private Partnerships (PPPs)

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2. How The World Bank works with Client Countries

➢ **Investment projects**

➢ **Policy Advice and Technical Assistance**

➢ **International Partnerships**

➢ **Global Research and Standards**

➢ **Training and Capacity Building**

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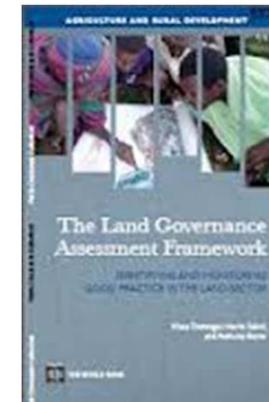
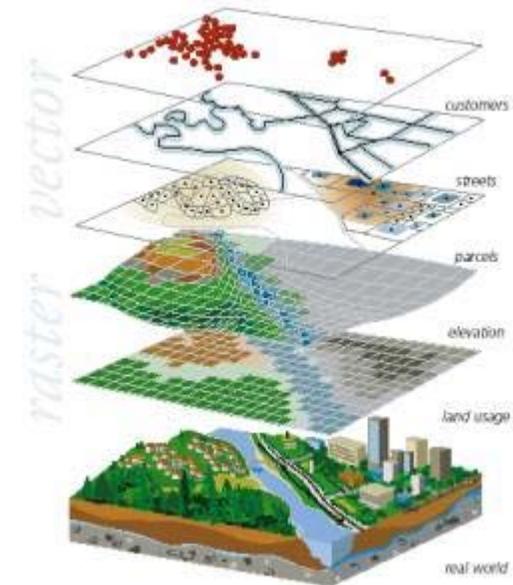## 3. Use of Geospatial Information Technologies in WB projects

Provide great opportunities to accelerate development and address global, national and local challenges, but "Geospatial" is not just more sophisticated maps…it requires

Paradigm shift:

From … seeing flat maps

To… Understanding issues in multiple dimensions

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… and use of multiple tools

Use of the Cloud

Indoor positioning

UAVs (drone)

Aerial and satellite imagery
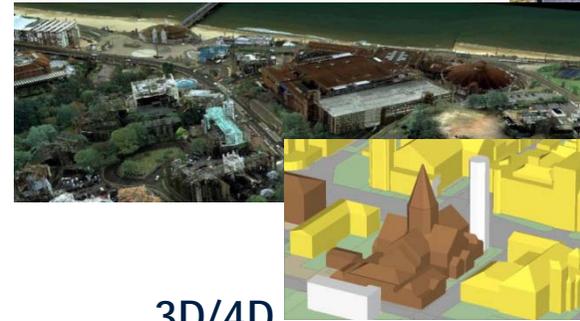
3D/4D visualization

So, Bank assists countries in …

➢ Developing legal and policy frameworks
➢ Building institutional capacities and skills training
➢ Developing and meeting standards
➢ Sharing good experiences across countries

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... in partnerships with...

... and civil society, private sector, academia

To leverage our
global, multi-sector expertise
through multiple financing instruments

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Urbanization…

… **is happening at an unprecedented rate in human history. Urban growth challenging the ability of cities to deliver the jobs, services, infrastructure, and security that residents need.**

Common challenges of using geospatial data:

➤ Changing technologies and exponential grown of data
➤ Building institutional capacities, training
➤ Ensuring consistency of standards and agency cooperation
➤ Managing Trade-offs… Open access / reliability / authority / outsourcing / funding

But there are also unique challenges in urban contexts…

➢ 3-D mapping (buildings)

➢ Registering horizontal properties (apartments), registering addresses

➢ Juxtaposition of private and public parcels and infrastructure in small areas

➢ Mapping underground infrastructure

➢ Frequent changes, dynamic updates (4-D mapping)

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# Geospatial information technologies can help with …

Public facility planning

Urban regeneration planning

Landscape planning

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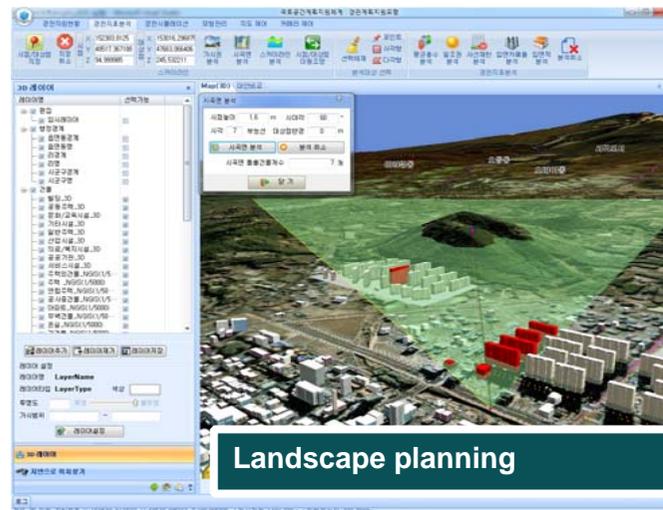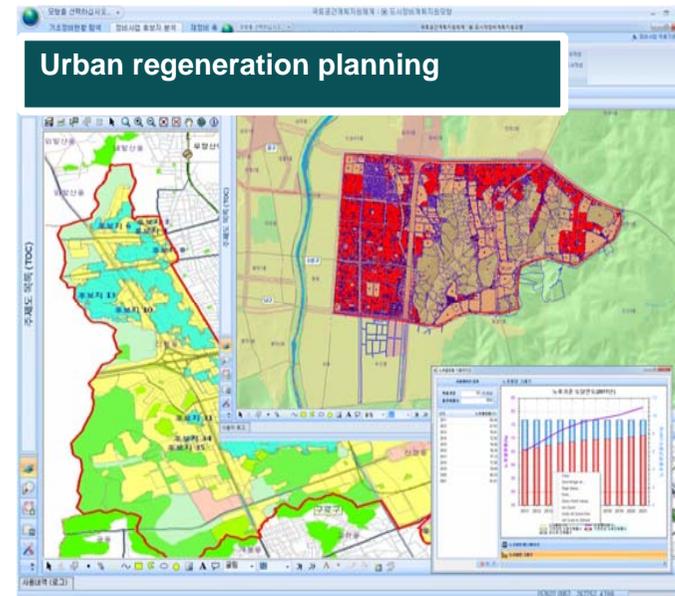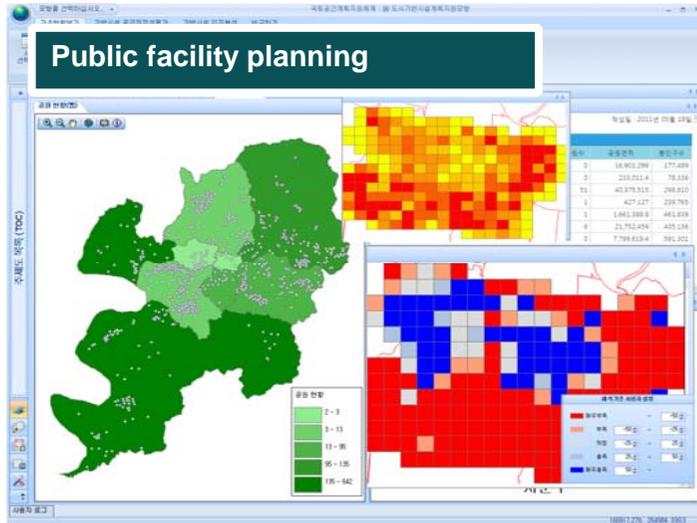
Urbanization with Geospatial

Land Use & Urban Structure

Complex land use for low-carbon urban structure

Ecosystem & Green Space

Reducing Carbon thru greening buildings & expanding green space

Low-Carbon Energy System

Reducing Carbon based on renewable energies & green home

Reducing Carbon By circulating water & resources & building waterfront space

Water Circulation

Reducing Carbon Thru u-bike & green car

Green Transportation

Green Lifestyle

Reducing Carbon system Based on movements on green consumption & green start

500m

Railway
Bus
Bicycle
Acess

Complex Use
Residential (High density)
Residential (Low density)

Neighborhood Square
District Square
Waterfront

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Other sectors – Land Administration Systems

Vietnam (US$ 100 mill, 2009-2015)

- ✓ Modernization of land registration system and improved service delivery
- ✓ Support for National Spatial Data Infrastructure (NSDI)
- ✓ Establishment of 63 one-stop shop local offices
- ✓ Field testing of FAO open source software

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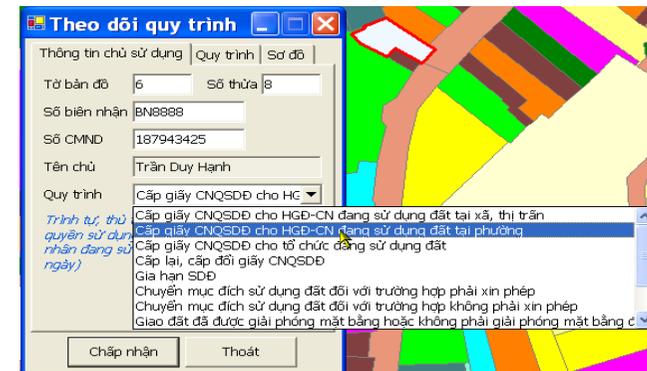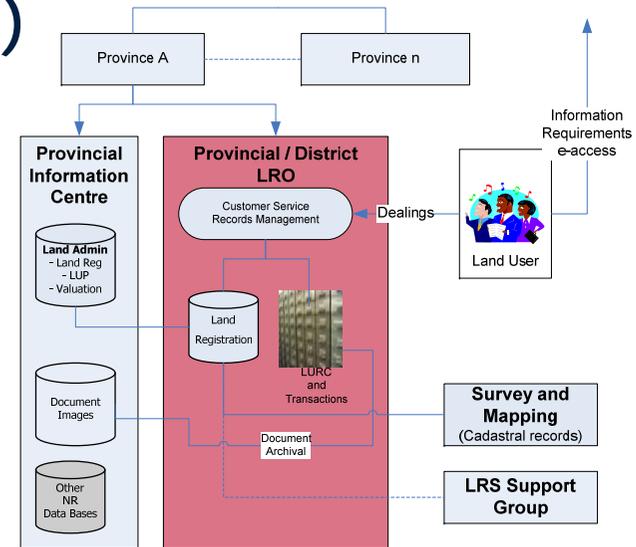
Spatial Data Infrastructure in Eastern Europe

❖ **SDI legal/regulatory base:** Croatia, Macedonia, Moldova, Russian Federation, Serbia and Turkey

❖ **SDI coordination mechanisms:** Albania, Croatia, Moldova, Serbia and Turkey

❖ **SDI strategies:** Croatia, Macedonia, Serbia and Turkey, Russia

❖ **Geo-portals:** Bosnia and Herzegovina, Bulgaria, Croatia, Latvia, Lithuania, Macedonia, Montenegro, Moldova, Serbia, Slovenia, Russian Federation, Turkey, Ukraine
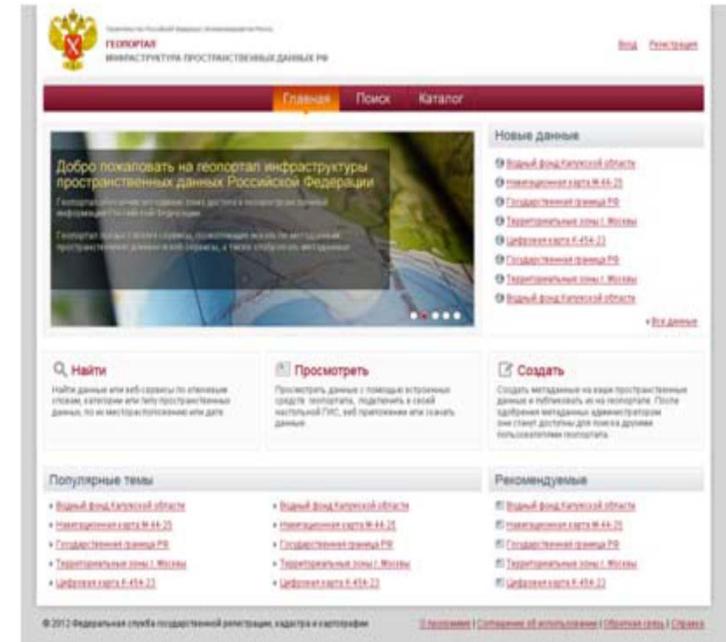
Russian NSDI gateway, opened April 2012

More than 300,000 metadata

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e-Services in Russian Federation

Also available on Mobile devices

Russian Public Cadastral Map' (PCM) e-service

❑ Over 15 million visits in 2013

❑ Over 25 million pages viewed in 2013

❑ Average length of PCM visiting is 29 minutes

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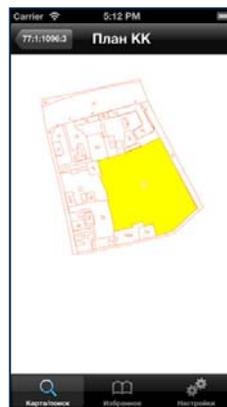
Land sector assessments in Latin America

Use geospatial data to assess urban expansion…

Precarious Settlements and Slope, San Salvador Metro Area
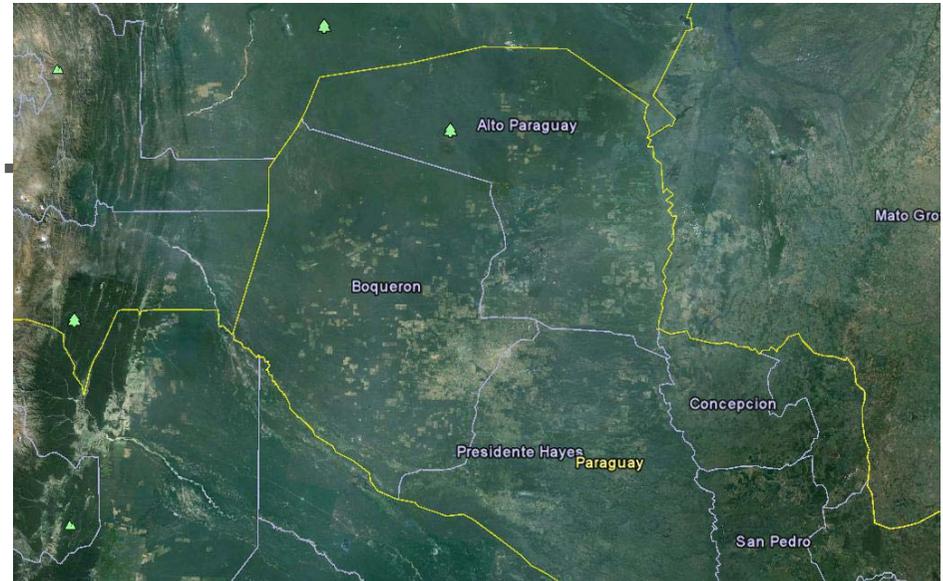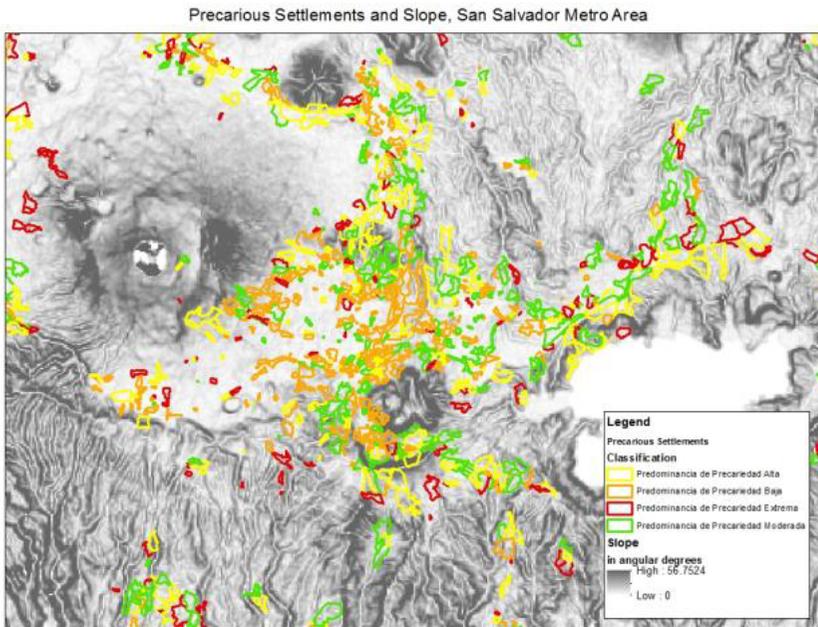
…or land use changes and deforestation

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Pacific Risk Management Initiative

Partnership WB / Asian Dev. Bank / SOPAC

- Provide the Pacific Island Countries with disaster risk modeling and assessment tools

- Largest collection of geo-referenced dataset

- Disaster Risk Planning

- Post-disaster damage assessment

- Public access to information

- Disaster Risk Financing
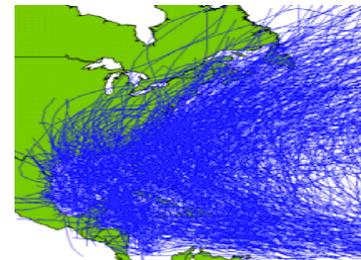
Event Generation

Intensity Calculation

Damage estimation

Exposure information

Loss calculation

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WAVES

Wealth Accounting and the Valuation of Ecosystem Services

A global partnership to ensure that natural resources are mainstreamed in development planning and national economic accounts

In context of 2010 Convention on Biological Diversity meeting in Japan to implement Natural Capital Accounting (NCA)

Partnership with UNEP, UNDP, other UN agencies, national governments, NGOs and academic communities

WAVES
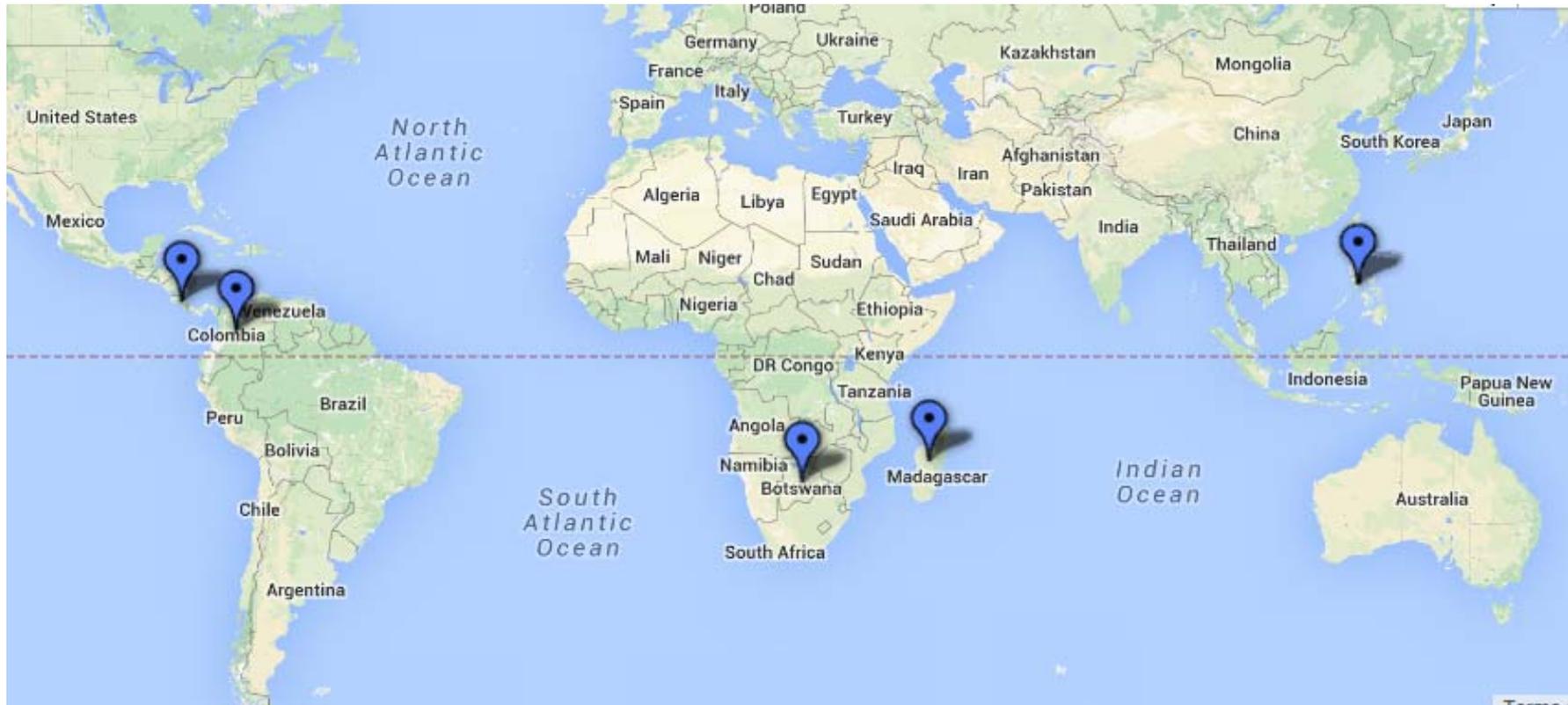
Core implementing countries with WAVES:
- Botswana, Colombia, Costa Rica, Madagascar, Philippines, Guatemala, Indonesia and Rwanda

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Africa Billion Dollar Map

- Lack of knowledge about mineral potential
- Difficulty in getting best value for countries
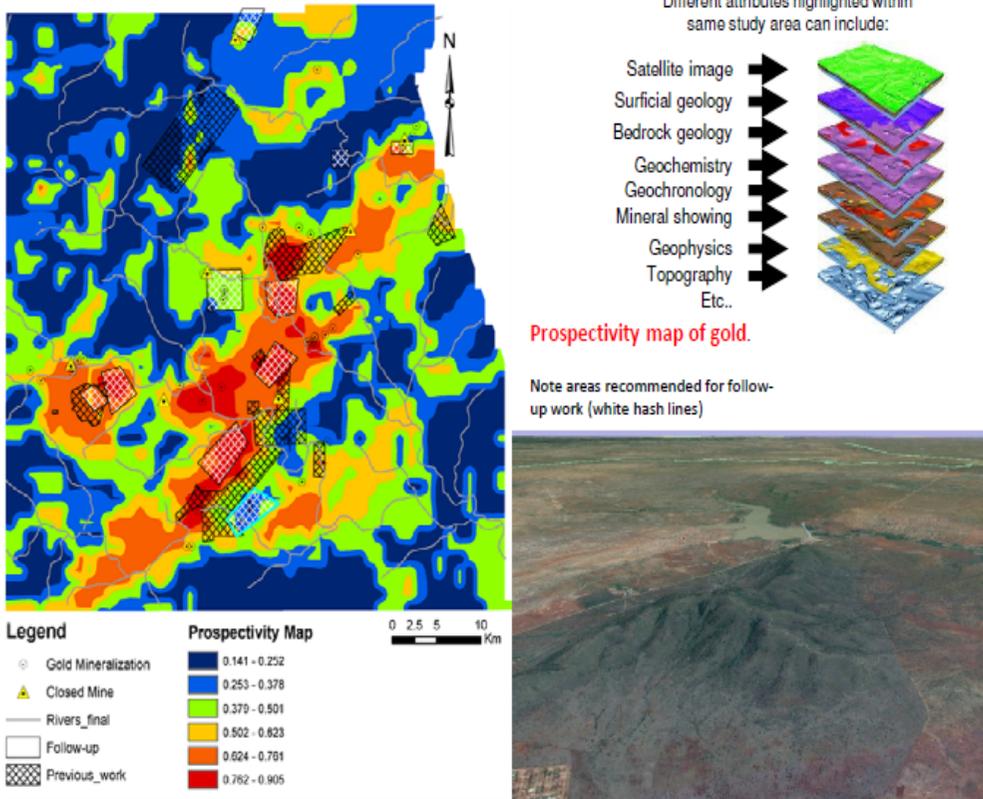- Reduce information asymmetry
- Considerable un-coordinated funding
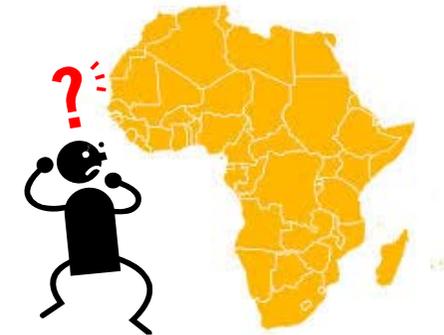
African Mineral Geoscience Initiative (AMGI)

- Provide public geo-data
- Improve value assessment
- Improve competitiveness and transparency in mining sector
- Maximize economic development impacts

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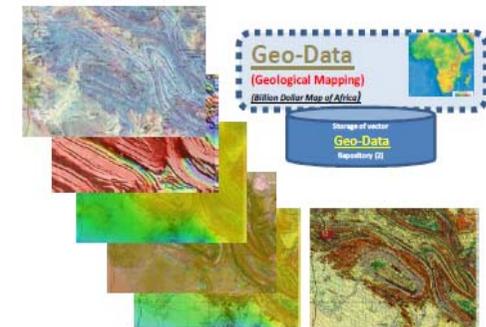
African Billion Dollar Map

Courtesy of the South African Council for Geoscience

Track-1:
Scanning & geo-referencing with existing geodata

Track-2:
Services & products with (geological)
Satellite images
(1:50,000 to 1:100,000)

Capacity Building

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4. Public Dissemination and Awareness

Mapping for Results: Locations of World Bank-financed projects to better monitor development impact, improve aid effectiveness, and enhance transparency and accountability

http://maps.worldbank.org/

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WB Climate Change Knowledge Portal

http://sdwebx.worldbank.org/climateportal

An online tool to comprehensive global and country data related to climate change

Thank you

for more information, please visit
www.worldbank.org

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