

# ***Sustaining Development Initiatives on Climate Resilience***

**Nagaraja Rao Harshadeep (Harsh)**

*Global Lead (Disruptive Tech.)*

*harsh@worldbank.org*



**THE WORLD BANK**  
IBRD • IDA | WORLD BANK GROUP

*Panel Discussion*

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# There are many Climate Resilience initiatives undertaken...

## Information

- Monitoring
- Analytics
- Decision Support
- Documentation
- ...

## Institutions

- Staffing
- Capacity Building/Training
- Collaboration
- ...

## Investments

- New/Rehab
- Hard/Soft
- Green/Grey
- Planning/ Implementation / Operations / M&E
- ...

# Managing Sustainability Challenges...

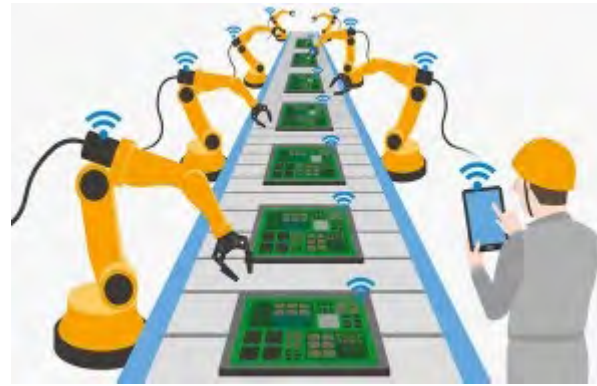
**Information**



# A new world of “Disruptive Technology”



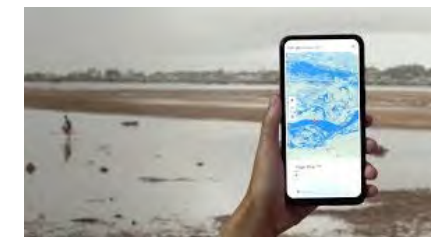
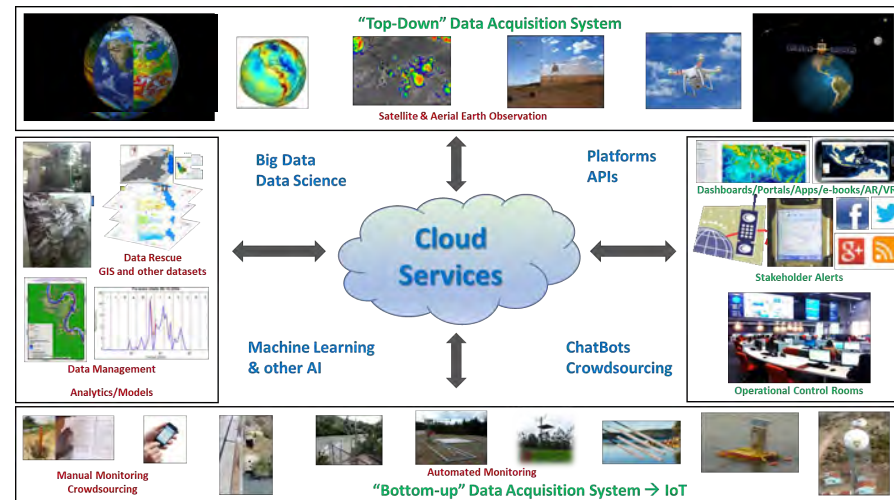
## “Disrupt” data value chains



## “Disrupt” production value chains

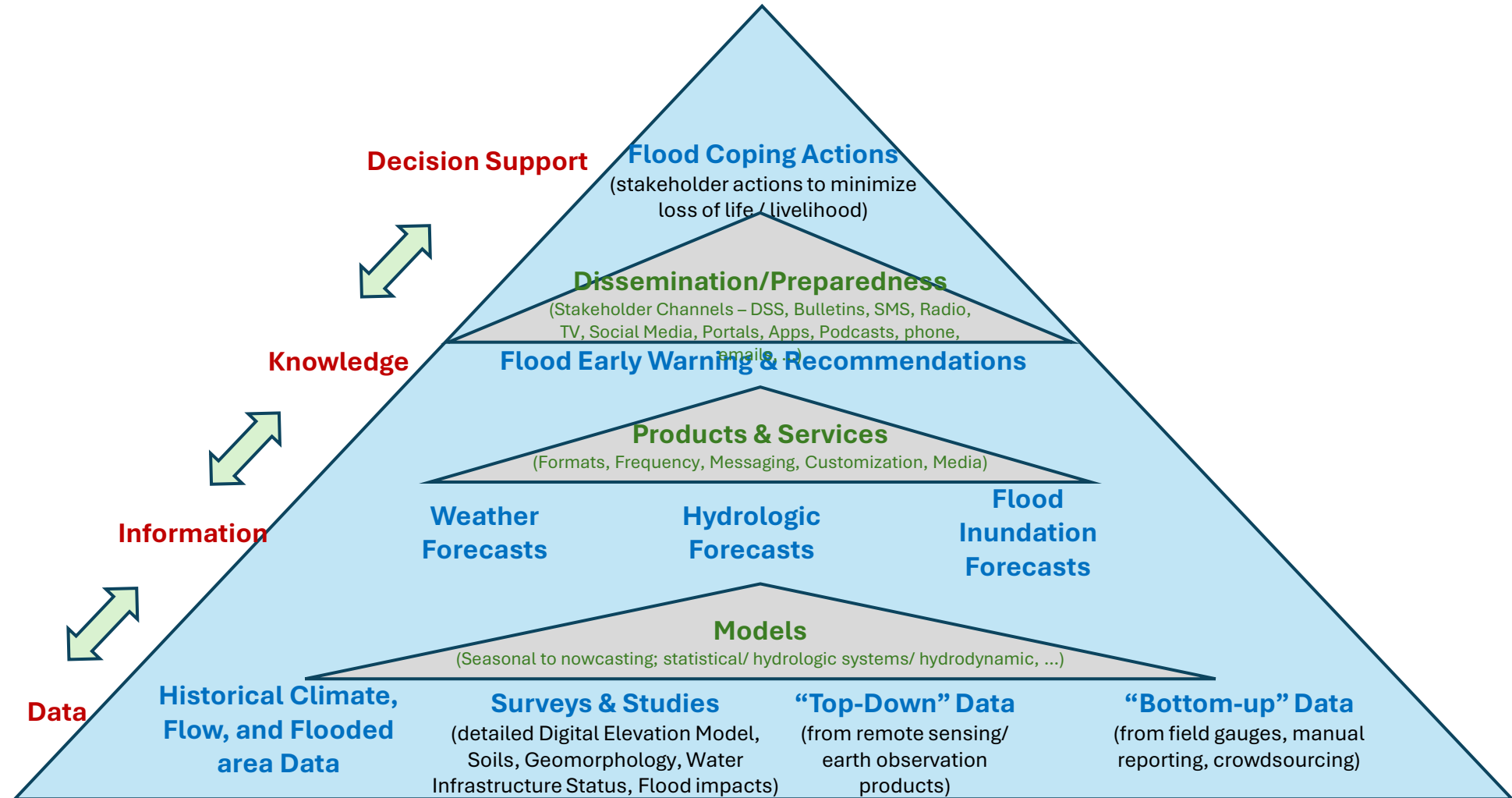


## “Disrupt” stakeholder value chains

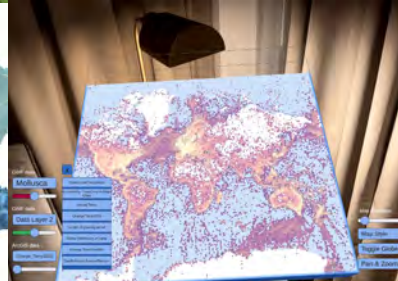
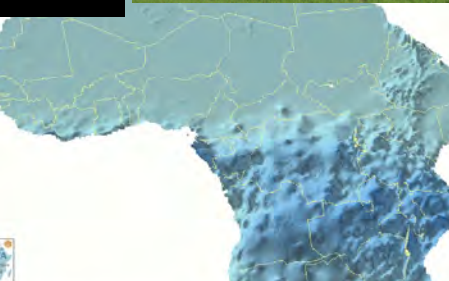
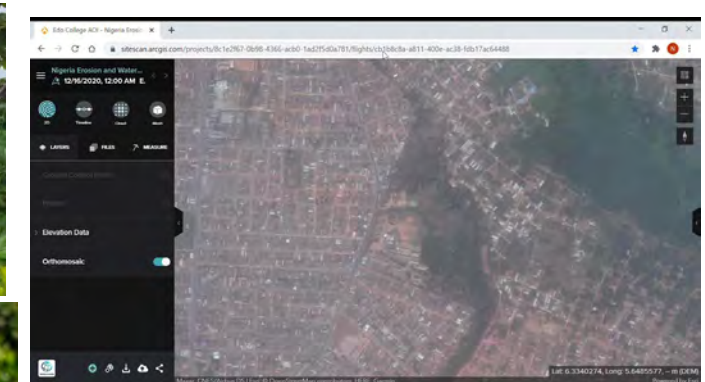
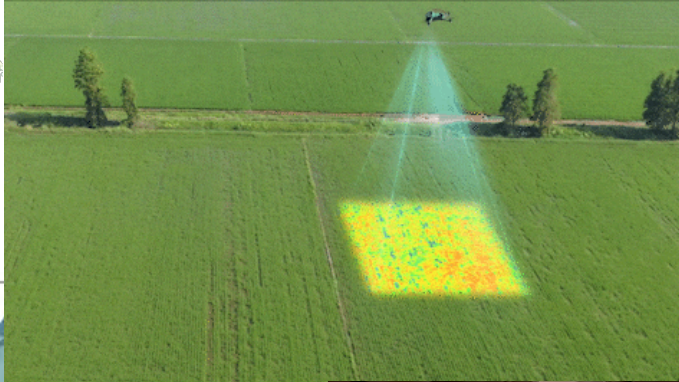
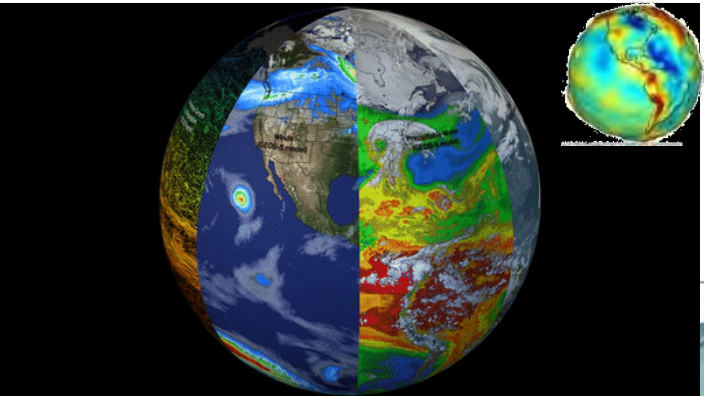


# The Data Value Chain

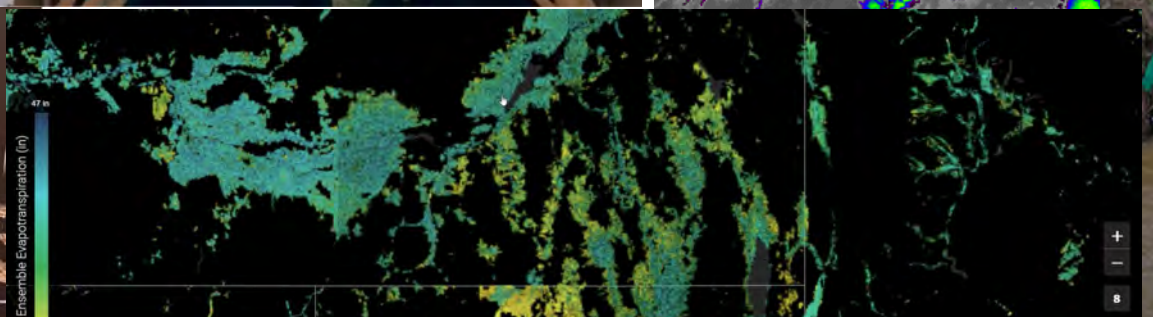
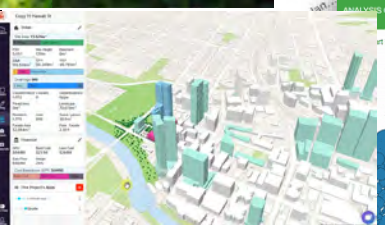
## Example: Deciding on Coping with Floods







and Elevation represent precipitation.  
Monthly Precipitation (mm/mo), 1950-2000 years.  
High : 1195  
Low : 0







# AI AI AI AI AI...



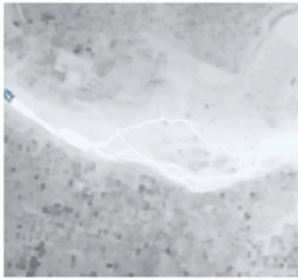
## Pattern Recognition/ Gap filling/Forecast



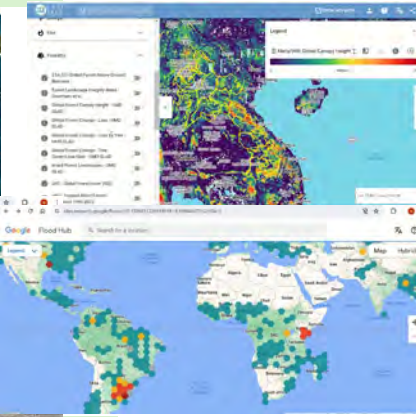
(a) Input image



(b) Output looping video



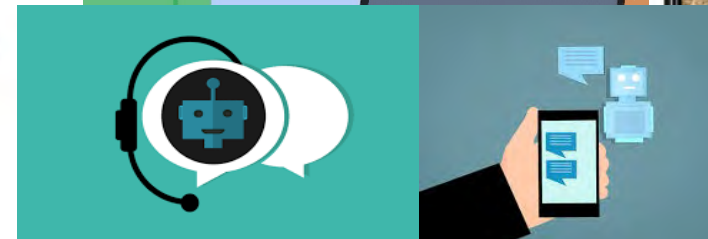
## Data Creation



## GenAI/GeoAI



## Cloud Analytics

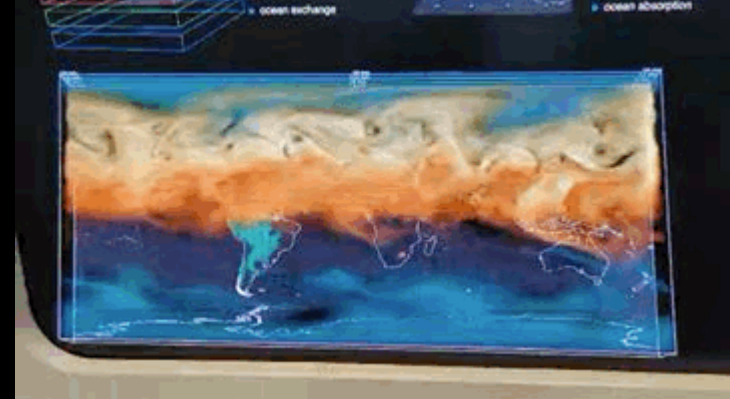
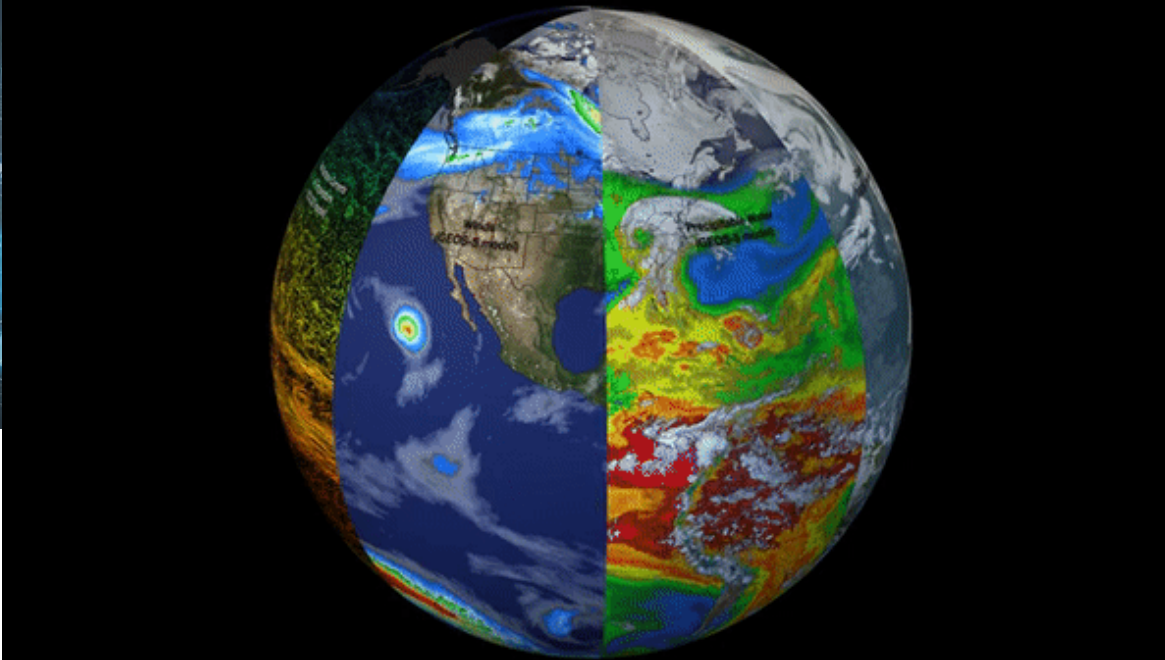




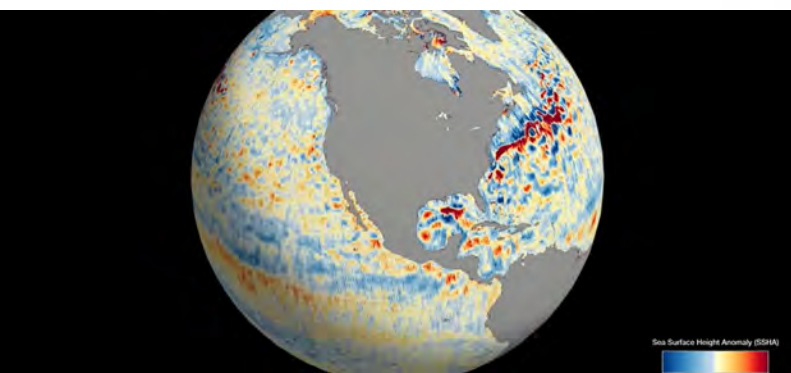
# Information

- Open Data; Free/Open Cloud Analytics; AI (Training data); ePackaging
- Access of products and services to all relevant stakeholders
- Other Innovations (e.g. financing, institutional, investments, performance-based incentives)
- Not one and done – need for continuous innovation





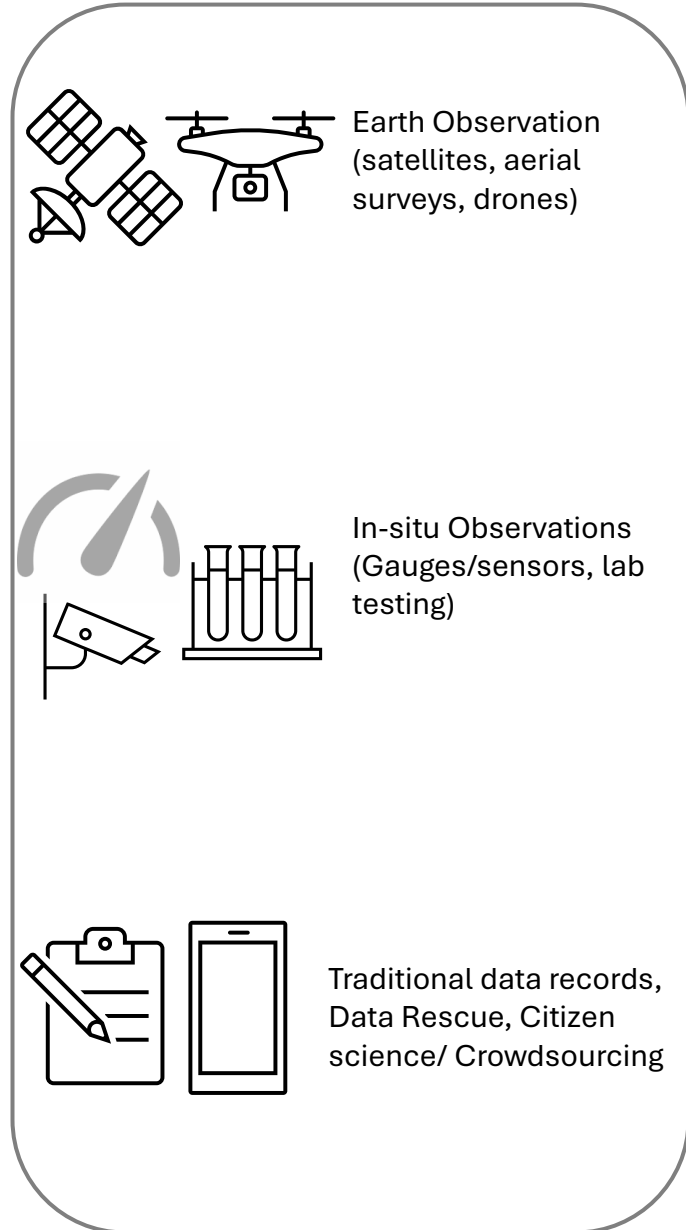
# Livable Planet Observatory





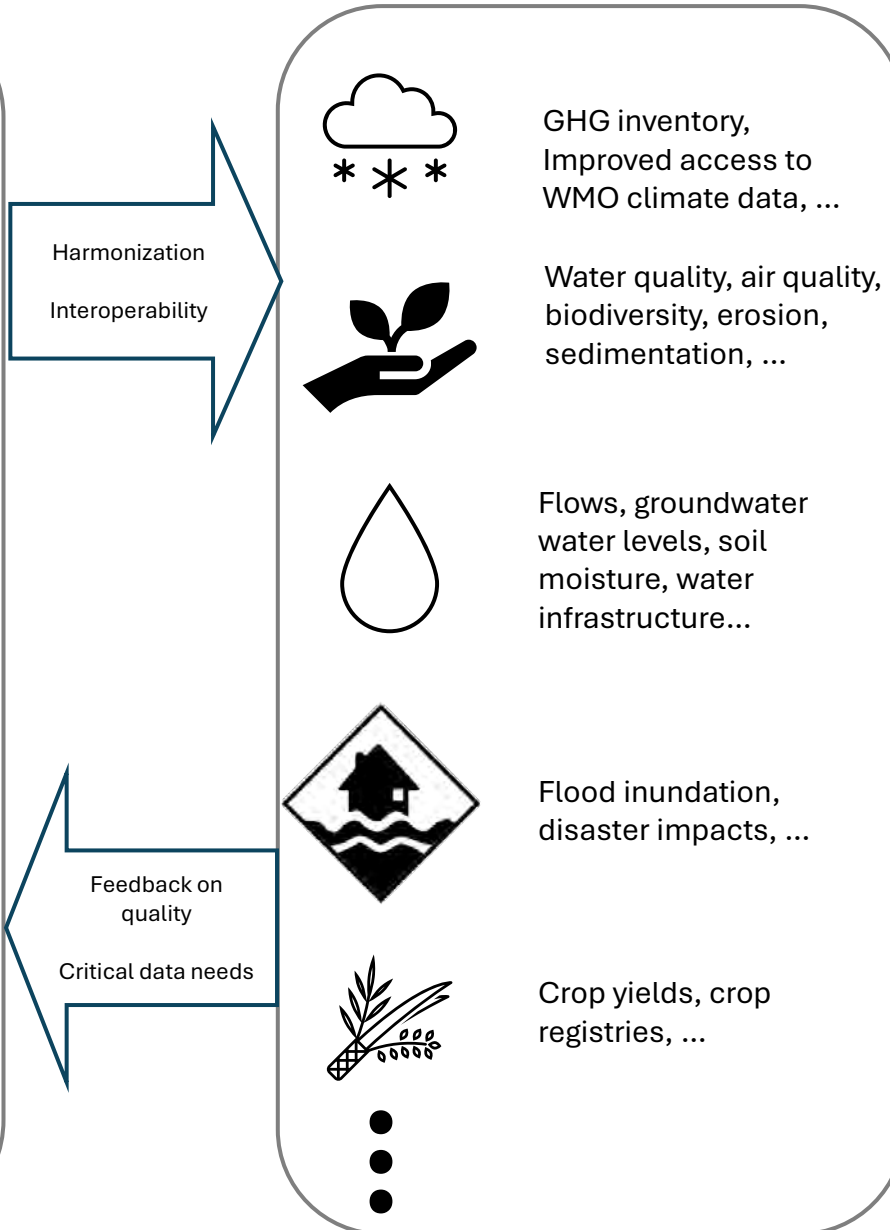
## Data Sources

(from country/regional/global sources)



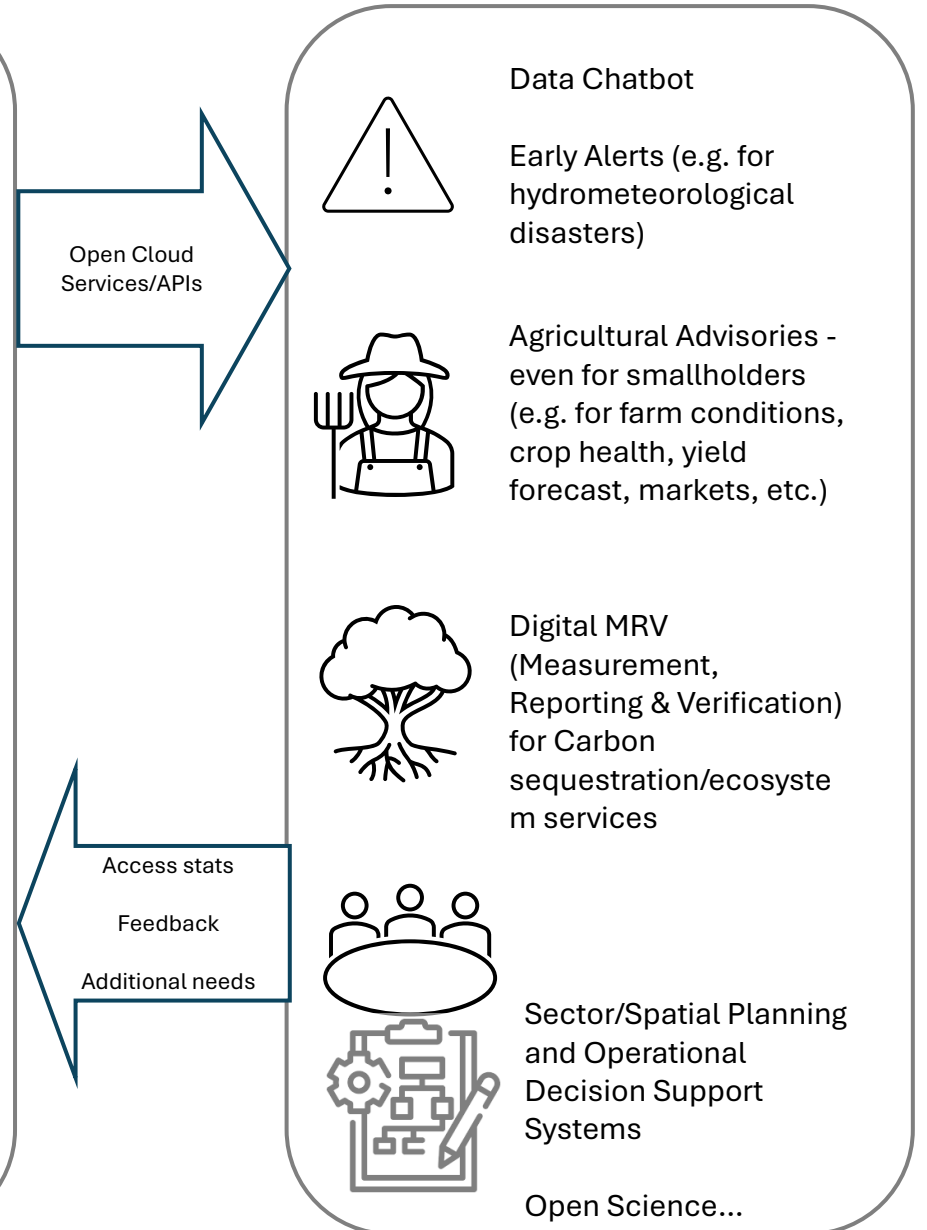
## Livable Planet Online Data Repository

(geotagged and time-stamped)



## Application Services

(AI-fueled analytics & customized dashboards)



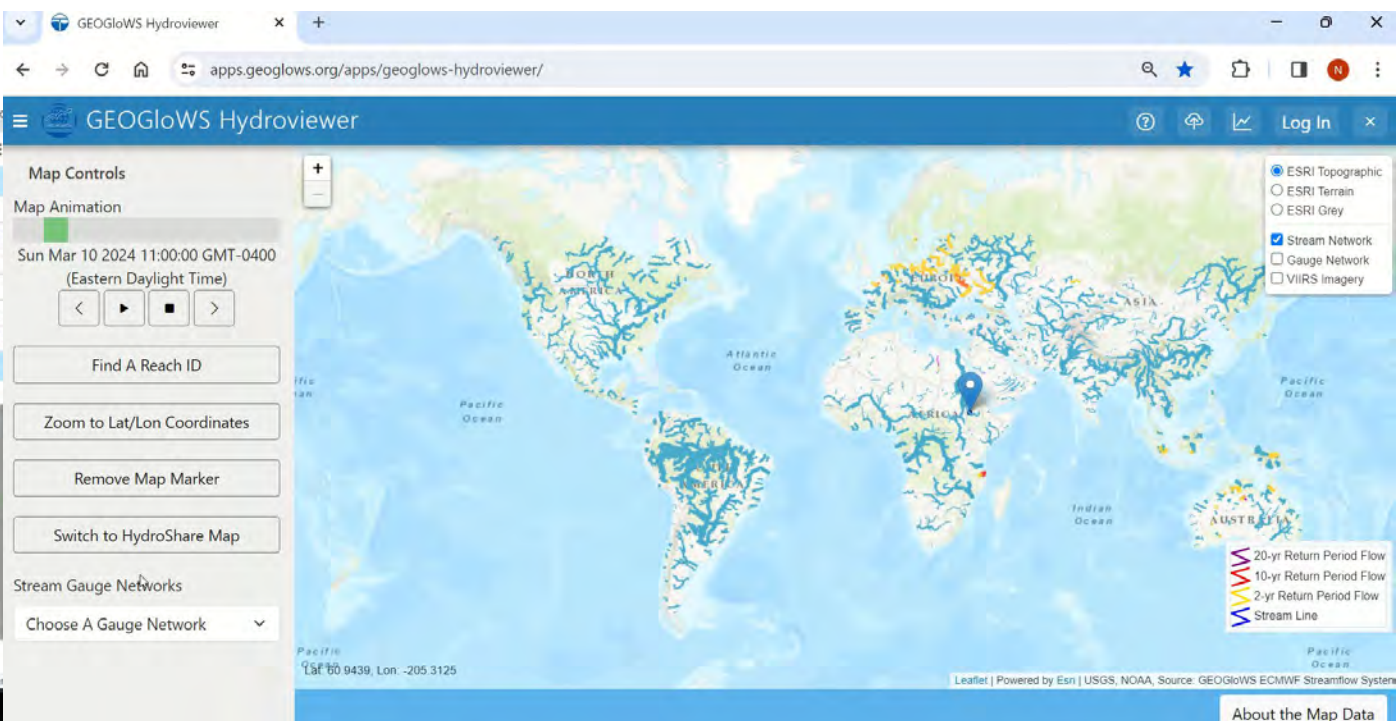
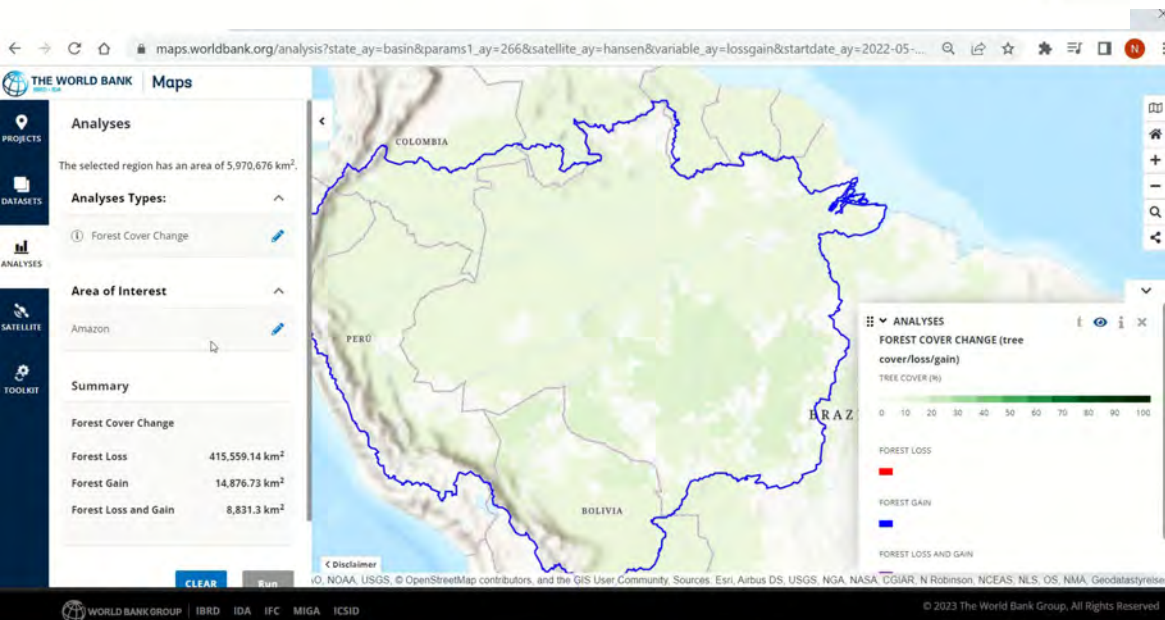
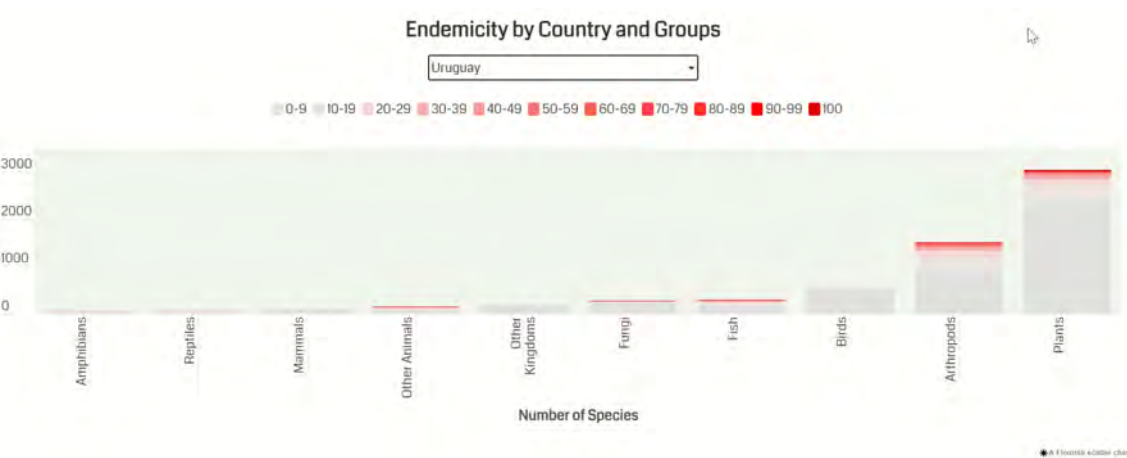
# Evolving Livable Planet Observatory Resources

## World Bank Geospatial Platform:

External: <https://maps.worldbank.org/>

## Spatial Agent mobile app (iOS, Android)

KIDS Catalog: <https://spatialagent.org/KIDS/>

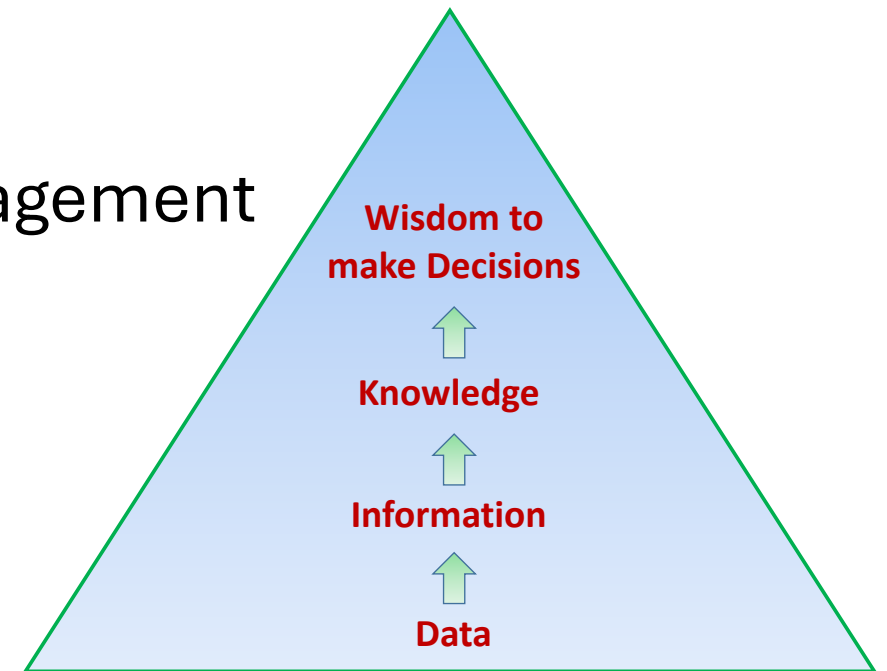




# Institutions

# Institutions

- Meaningful USE – stakeholders should miss it when gone!
- Integration into data value chain, business processes
- Adequate \$
- Meaningful stakeholder involvement
- Internships/Visiting Experts/Innovative Engagement
- Partnerships
- Shared Vision Collaboration





# The Elephant in the Room

Dark



دکف هر کس اگر شمریدی اختلاف از گشتن بیرون شدی

...

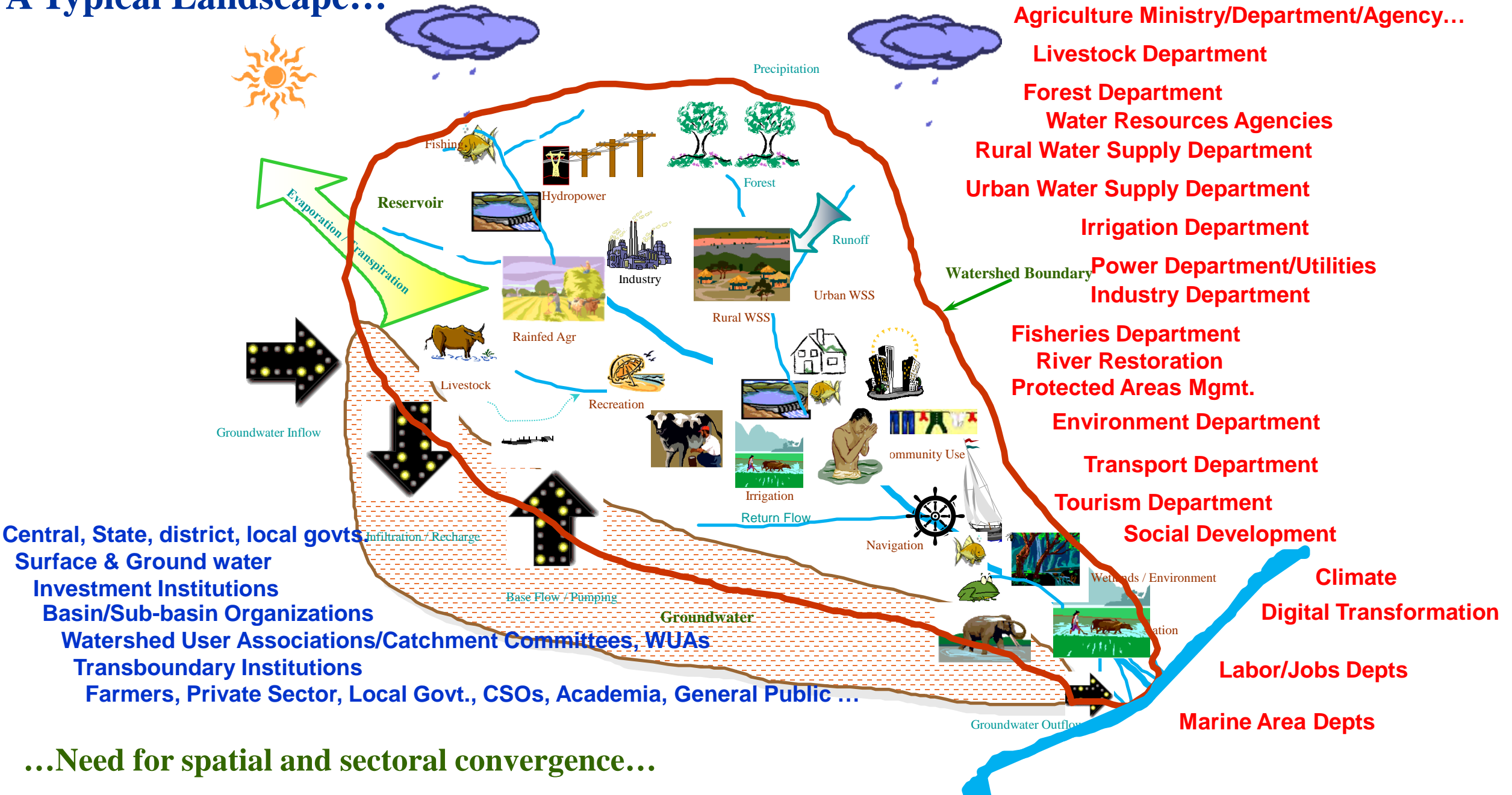
*Each of us touches one place  
and understands the whole in that  
way.*

...

*If each of us held a candle there,  
and if we went in together,  
we could see it.*

# Multiple sectors, multiple institutions, linked by water and natural resources...

## A Typical Landscape...



...Need for spatial and sectoral convergence...







# Investments

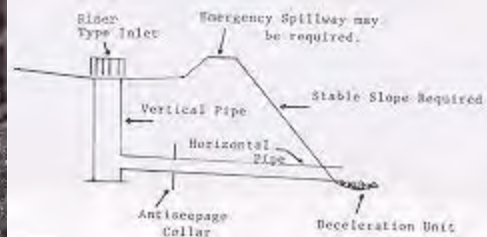




**Chute Spillway**



**Gabions**



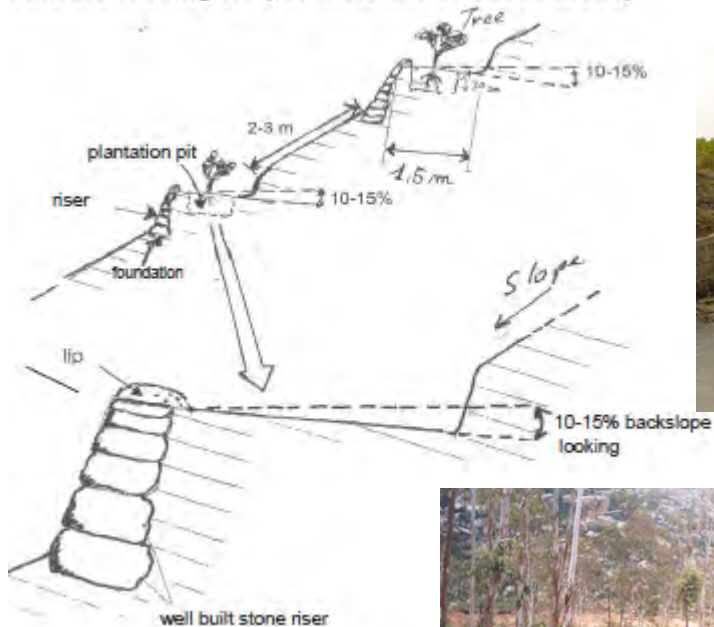
**Drop Pipe**



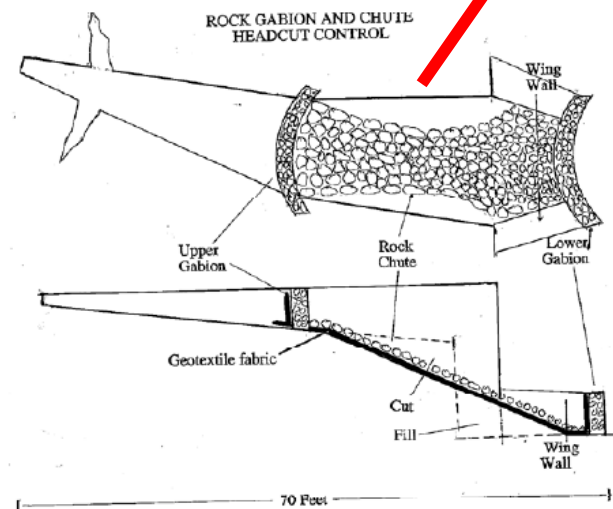
**On-Farm Systems**

<http://www.omafr.gov.on.ca/english/engineer/facts/88-059.htm>

**Inward looking HT (for moisture stressed areas)**



**Check Dams**



**Terraces**



**Ultrasonic Algal Control**

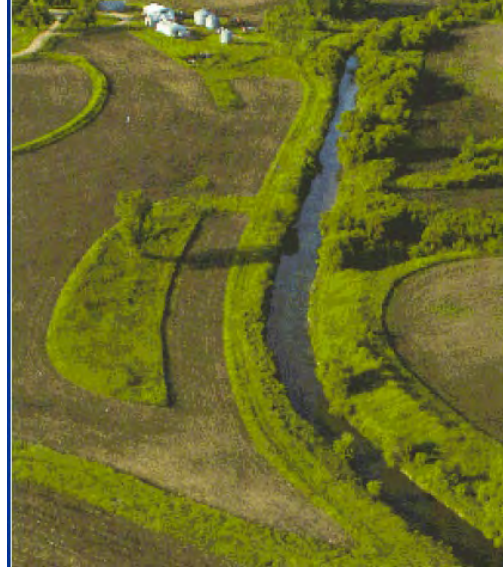




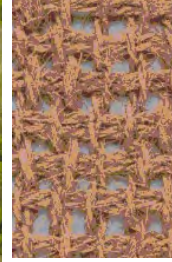
**Grassing**



**Afforestation**



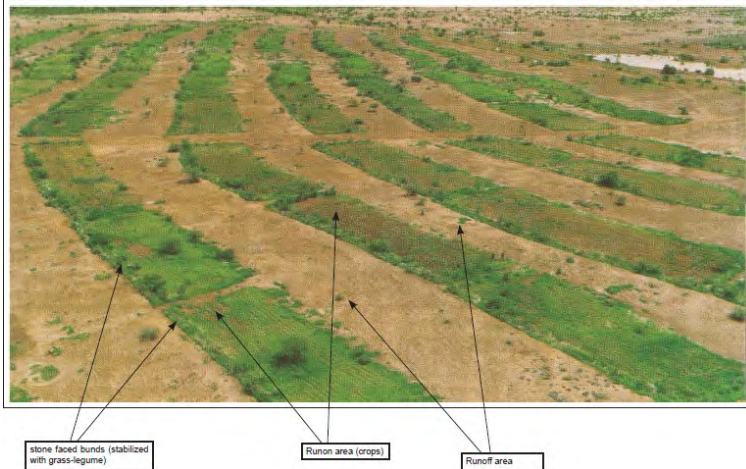
**Buffer Strips**



**GeoTextiles**



**Agricultural Practices (e.g. Conservation Agriculture)**



**Combinations**



**Live Check Dams**



# Green Infrastructure & Climate-Smart Watershed Investments



Flood Protection



Floating Gardens



Solar-covered Canals

Solar Pumps & Improved Irrigation



Green Corridors

Improved Agriculture



Different crop dev't practices



Row planting practice



Roads & Water Management

Water from a culvert is channelled into a deep trenches in Meqab area, Tigray, Ethiopia. Hand-dug

Source: Mekelle University & MetaMeta

[https://www.researchgate.net/publication/302590574\\_Water\\_harvesting\\_from\\_roads\\_climate\\_resilience\\_in\\_Tigray\\_Ethiopia](https://www.researchgate.net/publication/302590574_Water_harvesting_from_roads_climate_resilience_in_Tigray_Ethiopia)



DECEMBER 2016  
**GREEN**  
INFRASTRUCTURE PLAN  
for the Lower Brodhead Watershed

**GREEN INFRASTRUCTURE**  
FOR DESERT COMMUNITIES



Watershed  
Management  
Group



Floating Solar



# Investments

- Capacity, coordination for planning, implementation, operation, monitoring, replication/scaling
- Adequate \$ - planning, capital, O&M





# Overall – the bigger picture...

- Move from **retail to wholesale**; from closed databases to open data services; free/open cloud analytics & visualization
- **Integrated** spatial, multi-sectoral, multi-institution **perspectives**
- Link to and help integrate **existing and ongoing initiatives; emerging global good practices**
- **Long-term institutionalized view – not project-by-project**
- **Meaningful stakeholder participation**, Inhouse capacity, Communities of Practice, Partnerships
- **Adequate and continuous** innovation, services, adaptive management, and financing
- **Monitor, Document & Learn! Identify low-hanging fruit...**
- **Continuously innovate!**

# ***Disrupt or Be Disrupted!***

## **Thanks!**



<https://maps.worldbank.org/>  
<https://spatialagent.org/KIDS/>  
<https://bit.ly/LivablePlanetExplorer>