

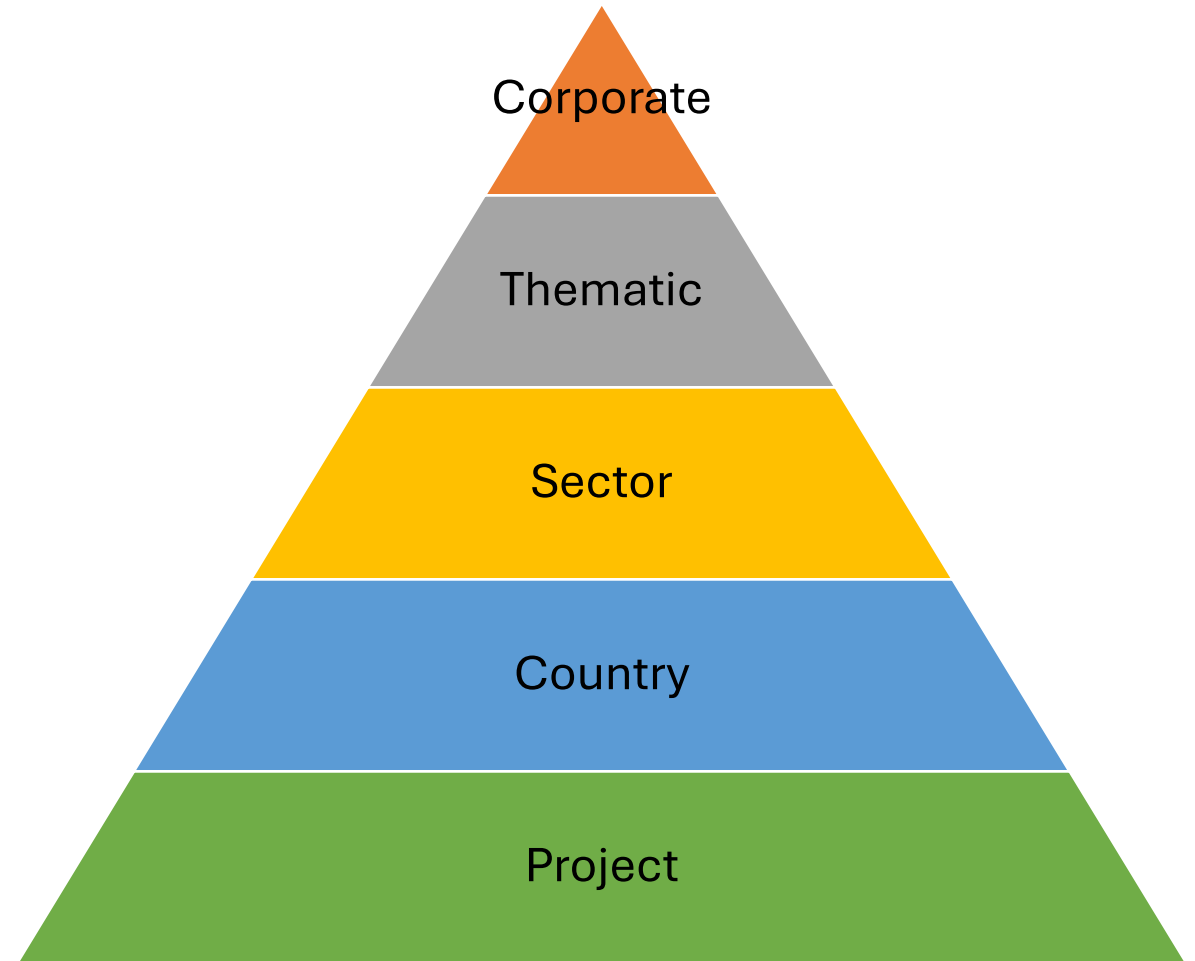
Mapping Impact: Leveraging Geospatial Data in Evaluation Practice

IEG Symposium on Unlocking the Potential of Geospatial Analysis for Evaluation

11 April 2024 (10:45 am to 12:00 pm, Washington DC)

Maya Vijayaraghavan, Asian Development Bank

Levels of
evaluation at
the Asian
Development
Bank



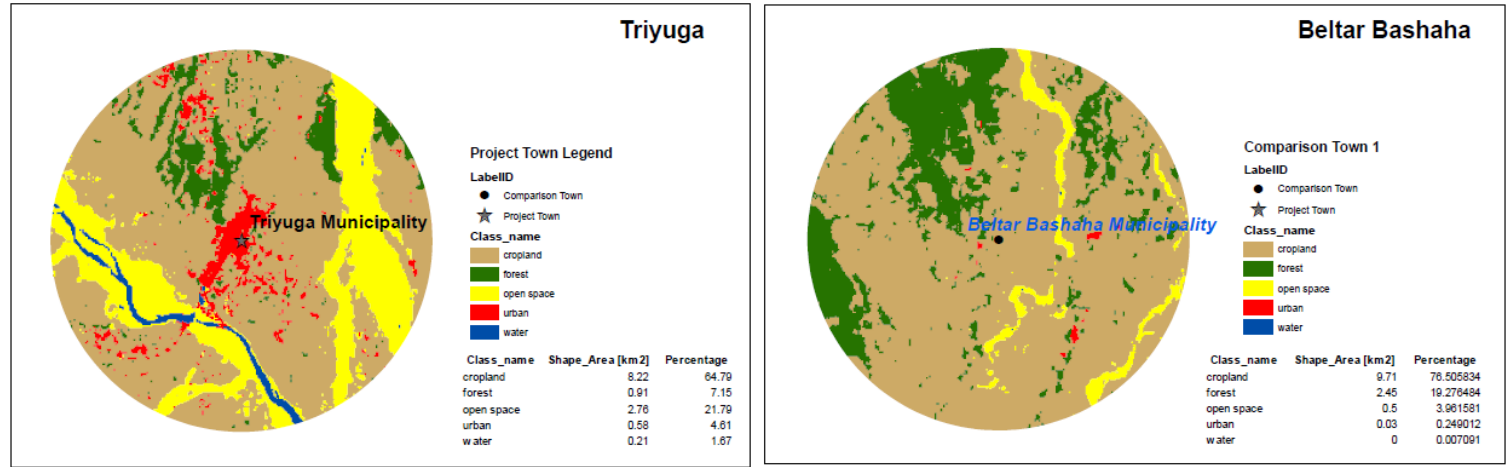
Leveraging Geospatial Data: Examples

- Selecting comparison groups for an ex-post impact evaluation
- Evaluating crop yields
- Evaluating wetland restoration
- Assessing performance of climate-proofed roads
- Evaluating economic growth along road transport corridors



Selection of comparison towns for an ex-post impact evaluation in Nepal

Triyuga Municipality Comparison Town Spatial Assessment



Name	Municipality Population 2011	Average Elevation in 2km Radius [m]	Distance to East-West Highway [m]	Distance to India Border [m]	Water Supply Status	Distance to Project Town [m]
Triyuga Municipality	71,405	163	17584	32031	Good	0
Beltar Bashaha Municipality	23,918	122	16730	26815	Poor	21335
Katari Municipality	28,123	210	18462	38280	Poor	37904
Mirchaiya (Terai) Municipality	47,016	124	317	23443	Good	45120

Impact Evaluation

Impact of Cost-Shared Water Supply Services on Household Welfare in Small Towns

Ex-Post Impact Evaluation of a Project in Nepal



Evaluating crop yields in Bangladesh

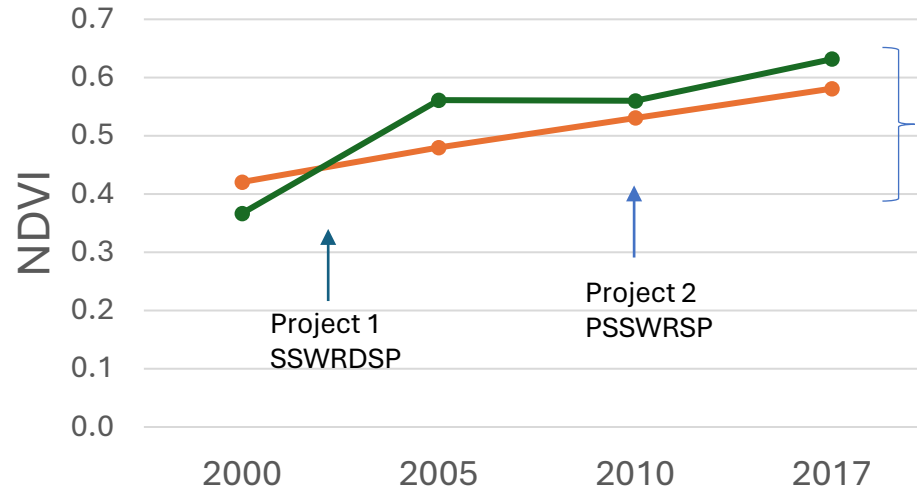
Sector-wide Evaluation

ADB Support for Agriculture, Natural Resources, and Rural Development

Independent Evaluation **ADB**

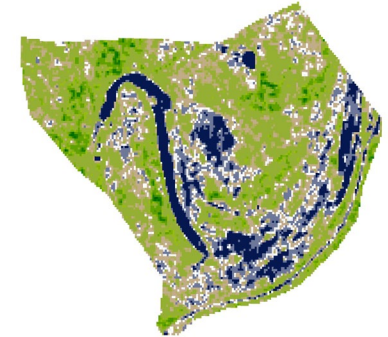
Raising development impact through evaluation

Normalized Difference Vegetation Index (NDVI) for Rice Yields



— Boro (pre-harvest) — Aman (pre-harvest)

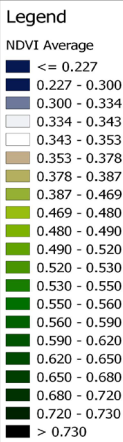
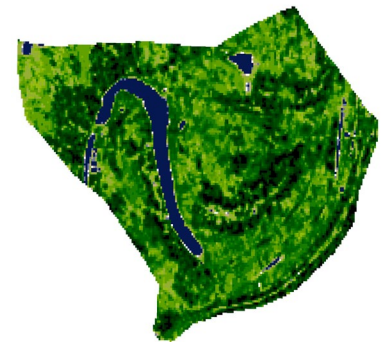
Average NDVI 2000



Yield Increase

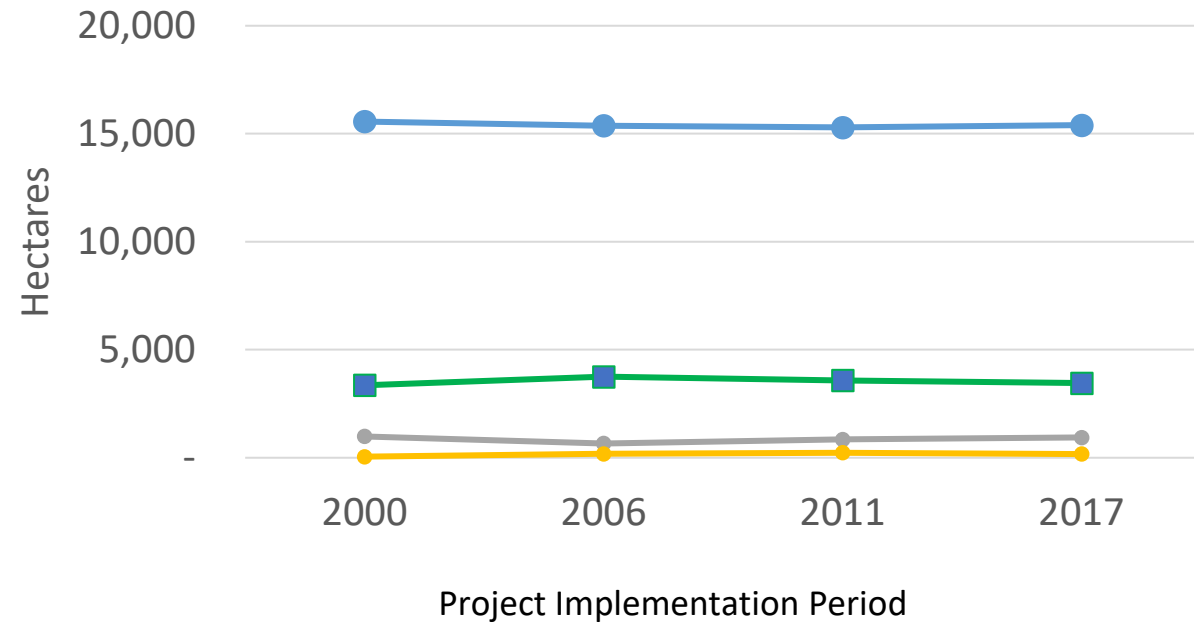


Average NDVI 2017

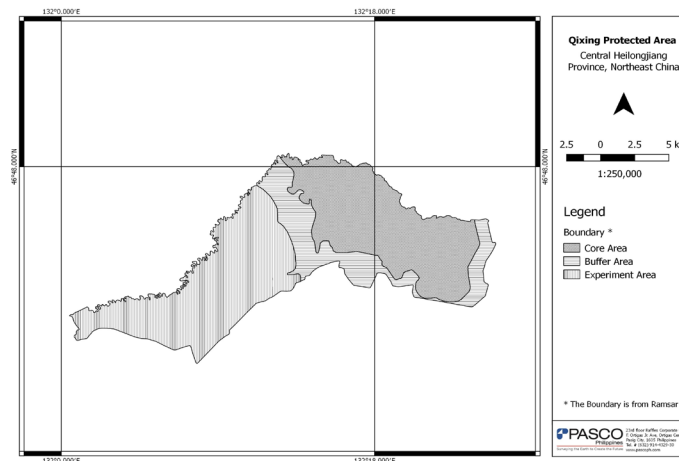


Evaluating wetland restoration in the People's Republic of China

Qixinghe Nature Reserve Land Cover



● Wetland ■ Agriculture ● Grassland ● Water bodies



Sector-wide Evaluation

ADB Support for Agriculture, Natural Resources, and Rural Development

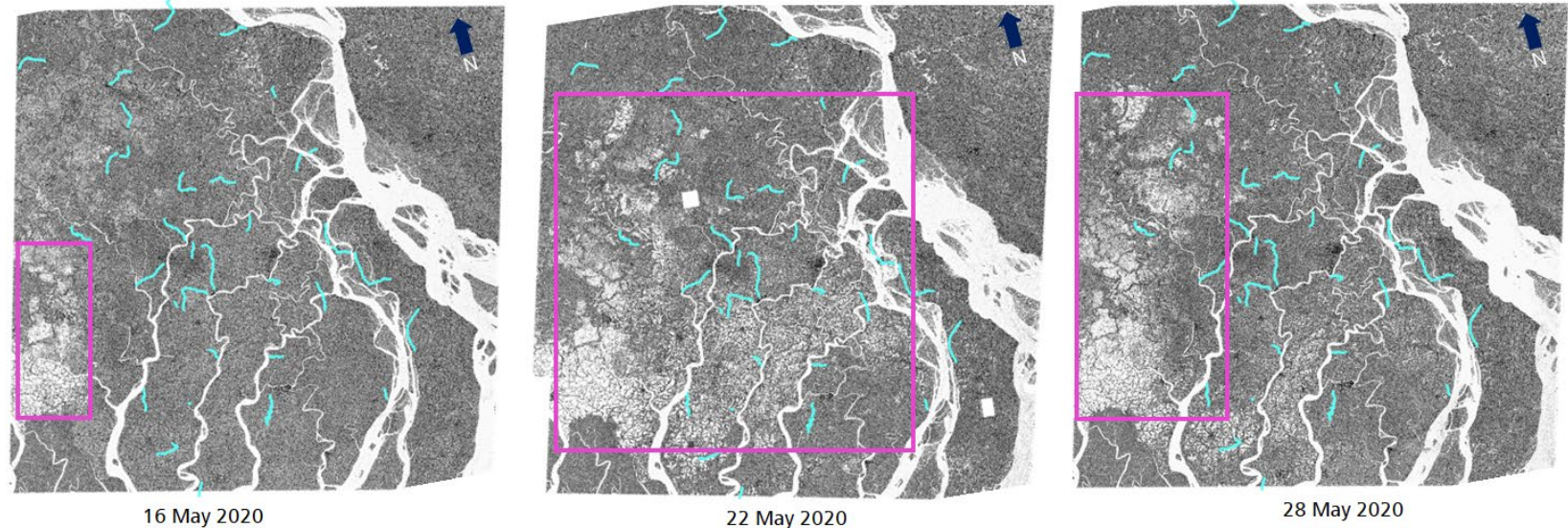
Independent Evaluation **ADB**

Raising development impact through evaluation

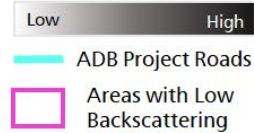
Assessing performance of climate-proofed roads in Bangladesh

Results using remote sensing to assess performance of ADB climate-proofed roads after Cyclone Amphan in May 2020 (Coastal Climate-Resilient Infrastructure Project in Bangladesh)

Sentinel-1 Satellite RADAR can penetrate clouds and detect inundated areas by comparing before and after scenarios of flooding in south central Bangladesh on 16, 22, and 28 May 2020, representing before, during, and after duration of Cyclone Amphan.



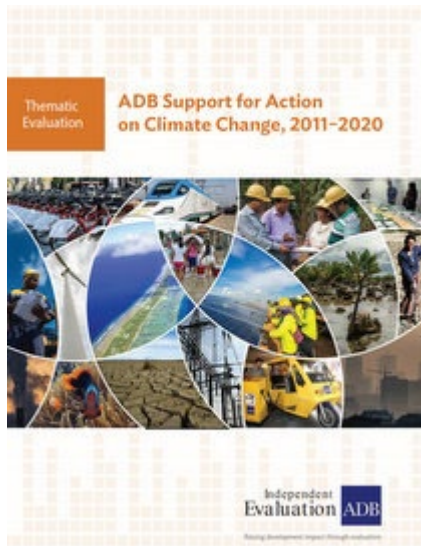
Backscattering*



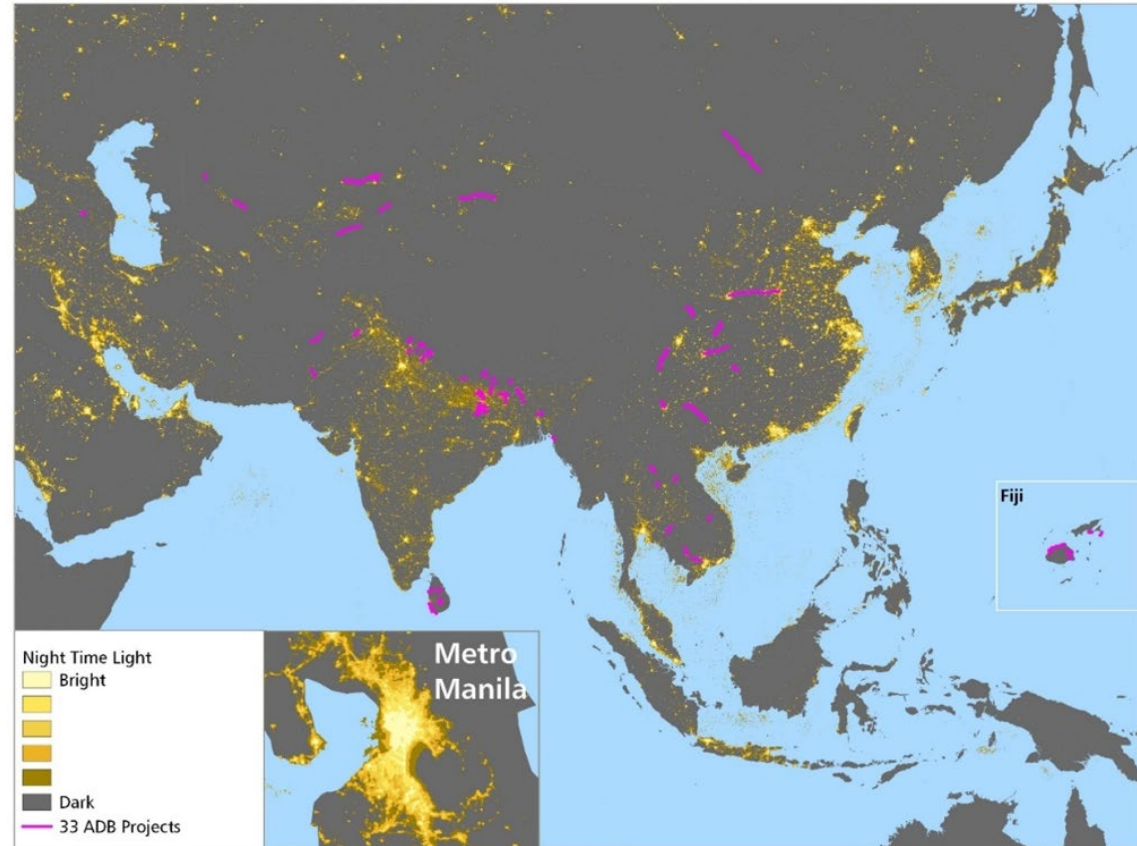
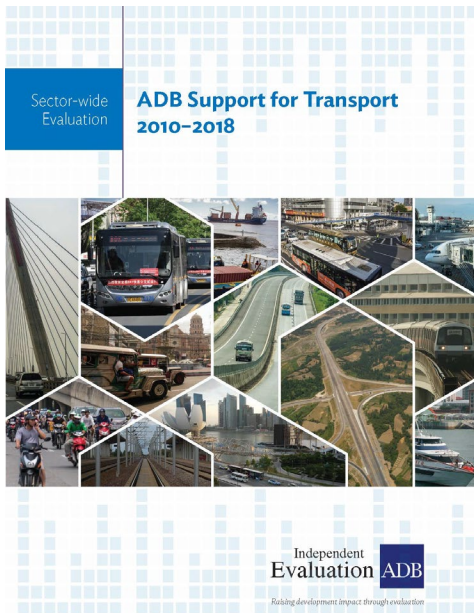
32 road segments funded by ADB were evaluated for flood inundation by comparing intersected pixels of RADAR images before (16 May), during (22 May), and after (28 May) Cyclone Amphan duration.

Total Number of Road Segments Observed	Number of Road Segments with Some Evidence of Flooding May 22	Number of Road Segments with Some Evidence of Flooding May 28
32	10	1

Note: Backscattering is the portion received of the transmitted energy (from the radio waves), this quantifies the strength (detection) and time delay (ranging) of the returned signal.



Evaluating economic growth along road transport corridors in Asia and the Pacific



Locations of 33 ADB-supported Projects

Economic growth Without Project	Economic growth With Project	Difference-in-Difference
6%	11%	5%

On average, 45% of the growth rate can be attributed to the 33 projects

Key Takeaways

- Variety of data types and sources
- Consistent and comparable data across geographies
- Extensive time series data
- Cost and time efficient
- Useful for all levels of evaluation



Thank you

Independent Evaluation at ADB



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