



Application of Geospatial Technologies for Identification of Suitable Rivers/Streams and Planning of River Rejuvenation Activities

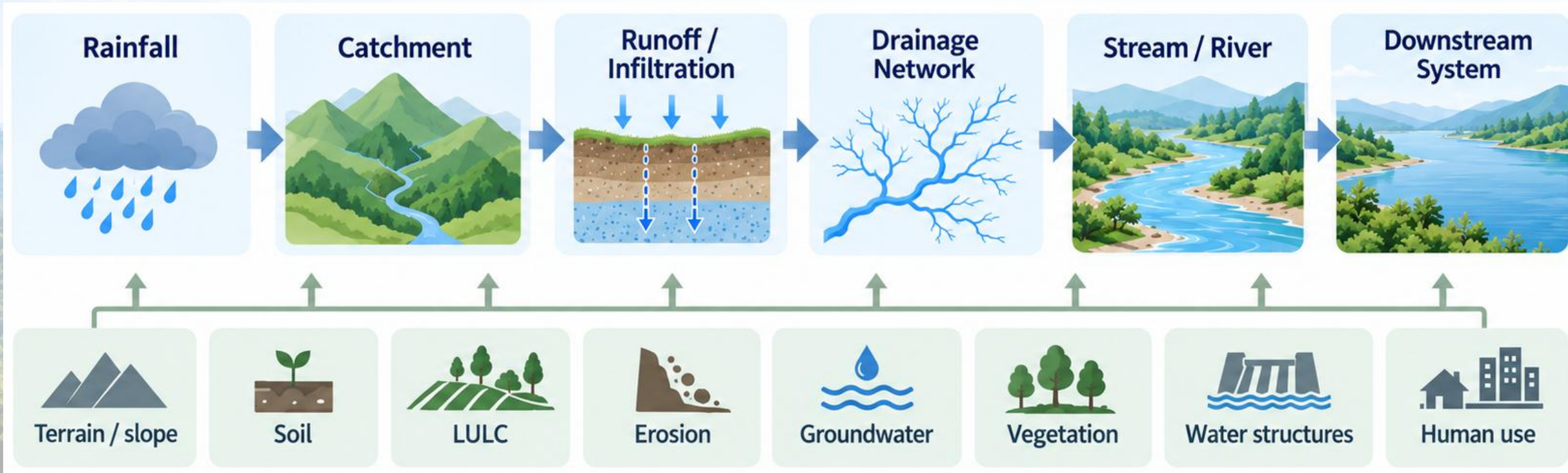
National Workshop on Rejuvenation of Rivers/Streams through Watershed Development Approach



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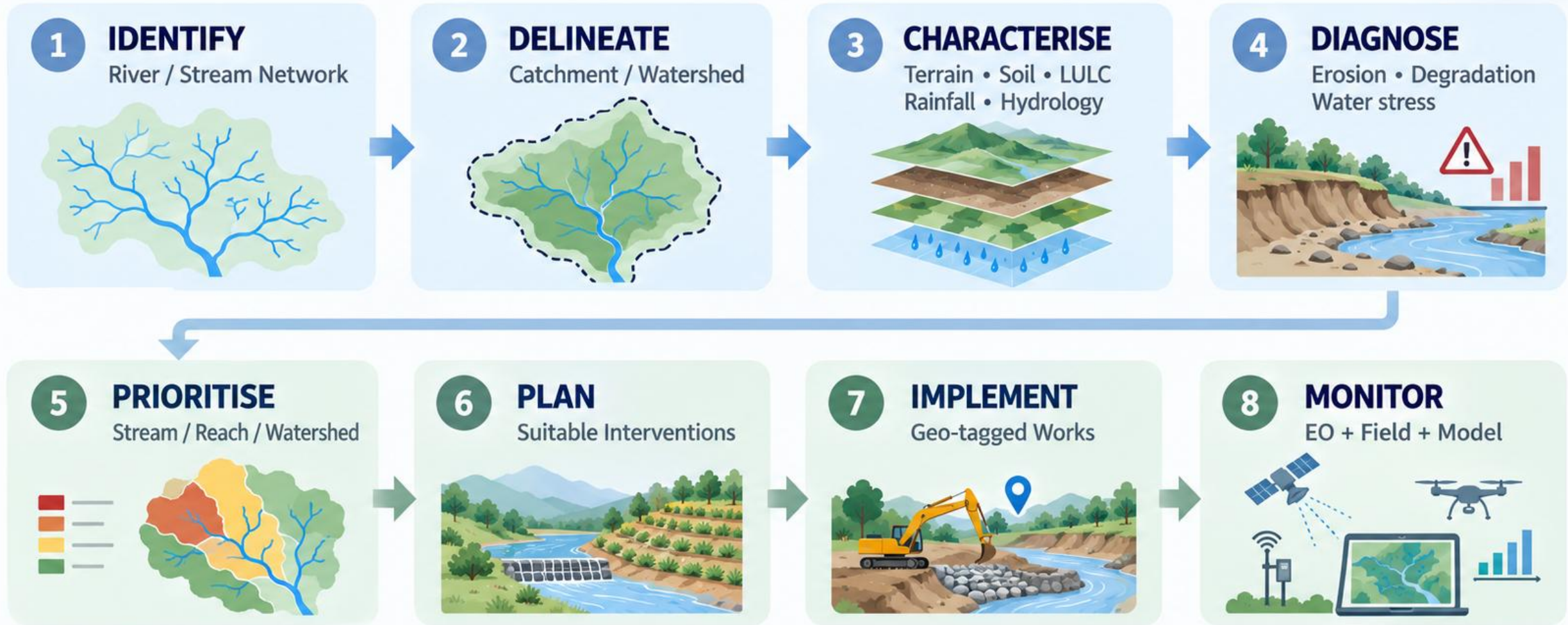
Why a Watershed Approach to River Rejuvenation?

A river is the receiving system; the watershed is the intervention domain



Geospatial technologies connect these layers spatially and temporally

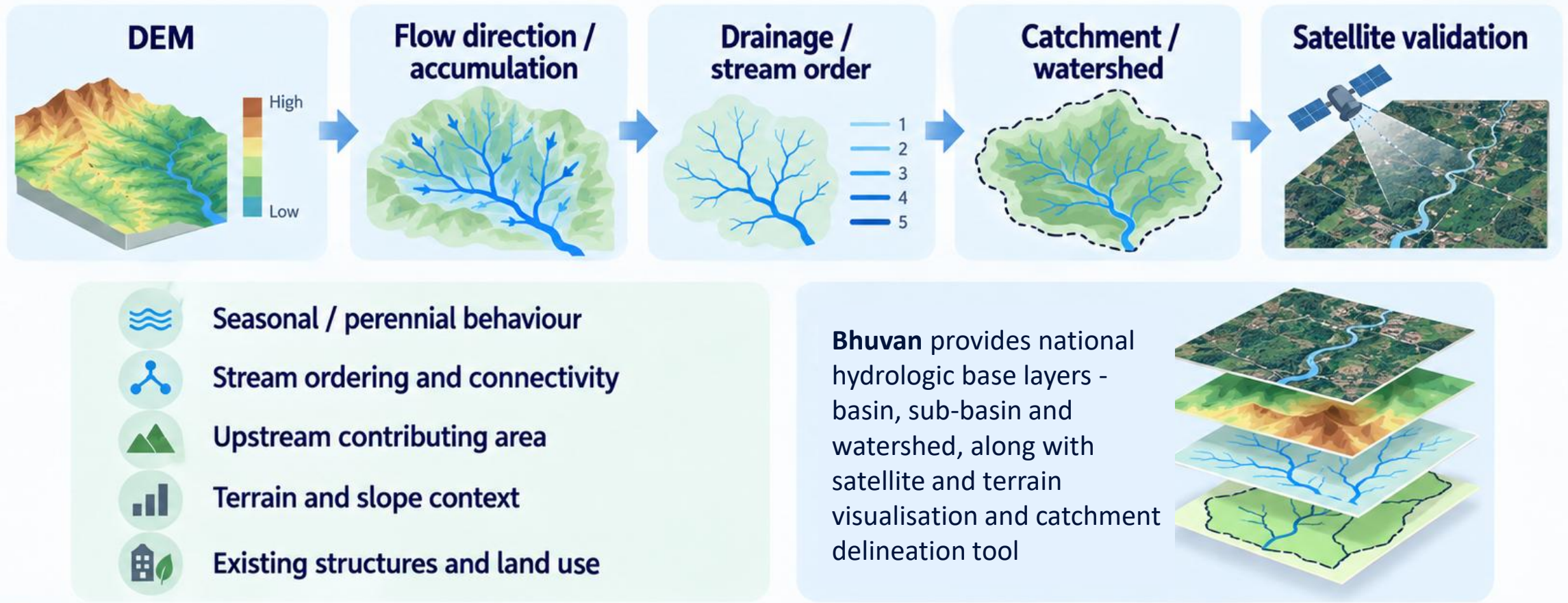
Geospatial Framework for River/Stream Rejuvenation



EO + GIS + DEM + Hydrological Modelling + Field Data

Identifying Rivers / Streams and Their Watersheds

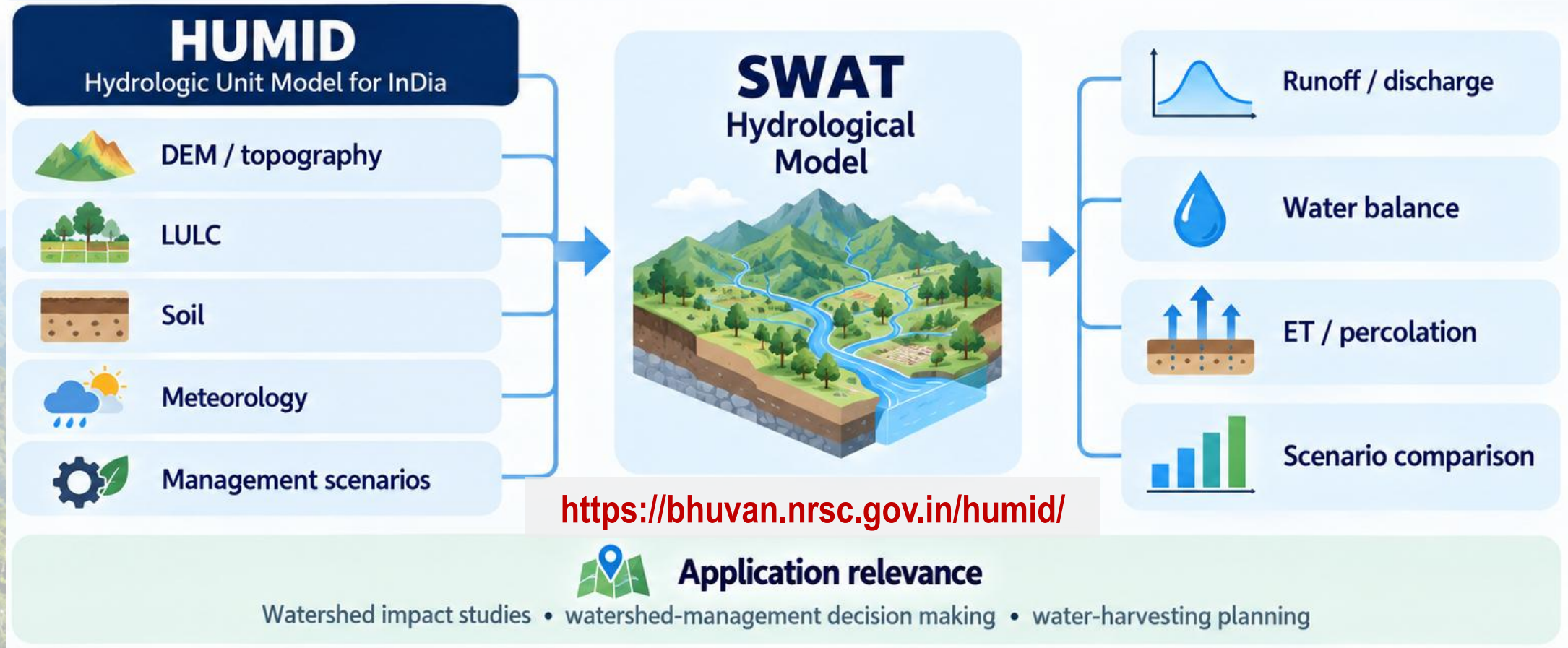
From a mapped channel to a stream linked with its contributing watershed



Outcome: a spatially consistent River / Stream + Watershed inventory

Understanding the Watershed - HUMID

Hydrological modelling and scenario analysis within a web-enabled SWAT framework



Use HUMID to understand and simulate the watershed response - not as a substitute for field validation

Diagnosing Watershed Degradation using RUSLE

Spatial erosion assessment to identify areas requiring watershed treatment

RUSLE Inputs



Rainfall erosivity (R)



Soil erodibility (K)



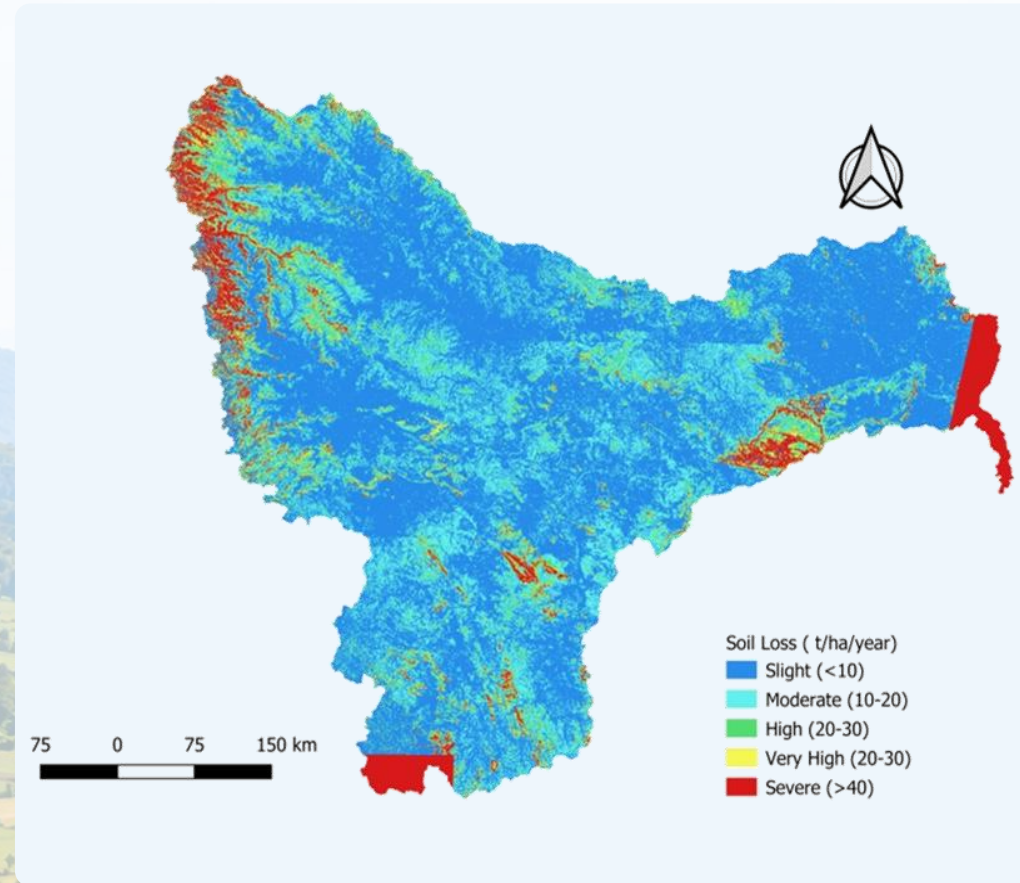
Slope length & steepness (LS)



LULC / vegetation



Cover / practice factors



Key Results



Average annual soil loss
11.64 t/ha/year

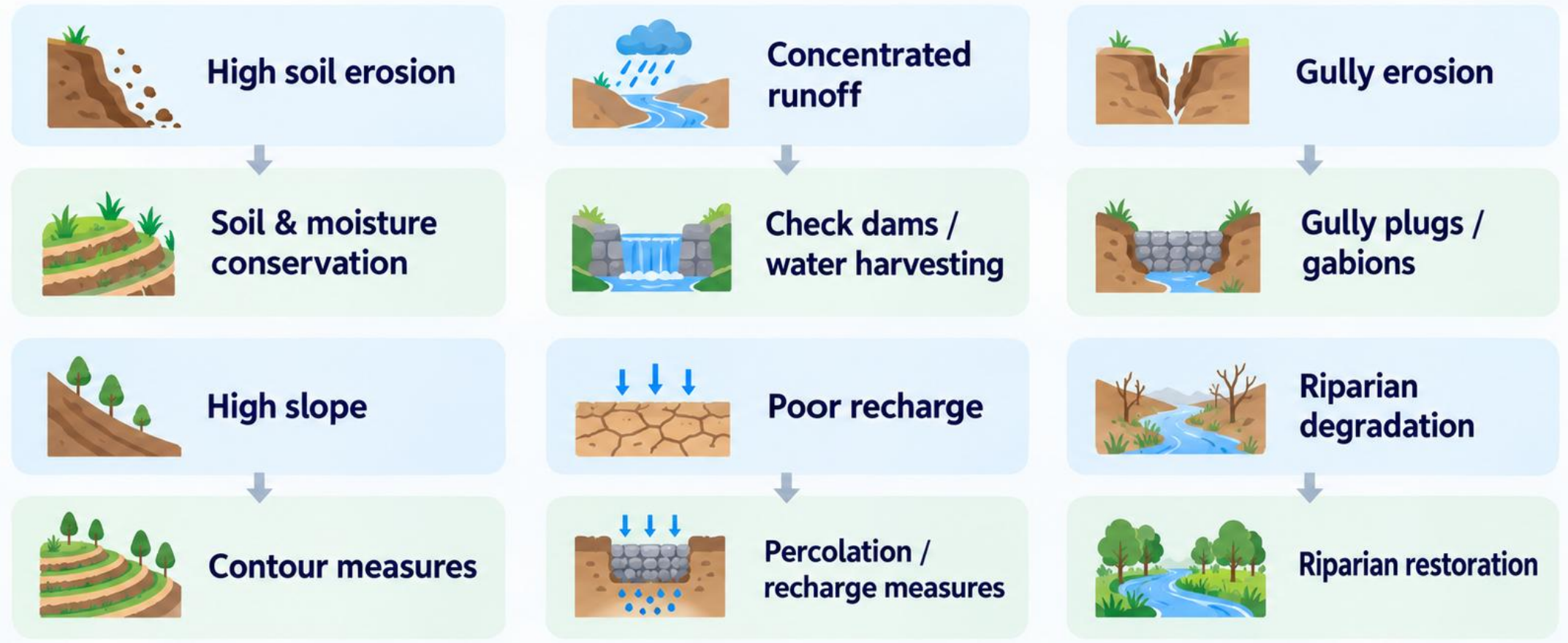


59.3% of TGA
under slight erosion

RUSLE supports basin-scale diagnosis and watershed prioritisation

From Diagnosis to Intervention

Match the intervention to the spatial and hydrological condition



Principle: intervention should be location-specific and watershed-context dependent

Impact of Soil & Water Conservation Structures on Soil Erosion

Pre- and post-treatment geospatial assessment of erosion

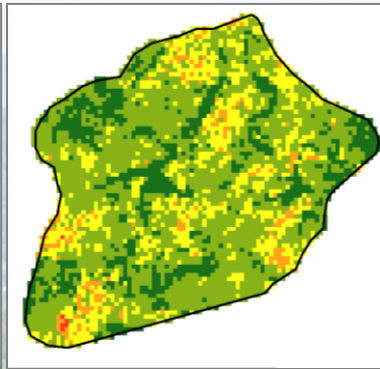
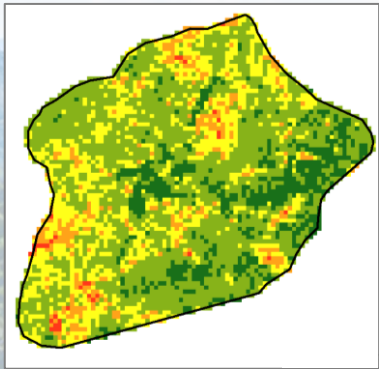
Kharun Nala (Balod)
39.92 km²

Aura Nala (Korba)
50.7 km²

Baharjodi Nala (Bastar)
49.89 km²

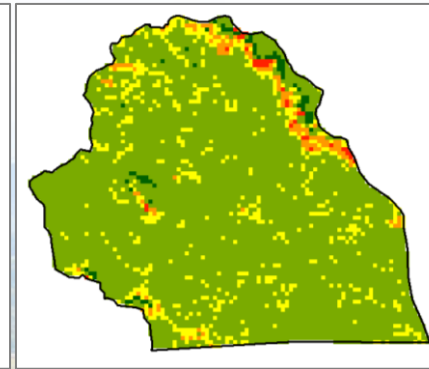
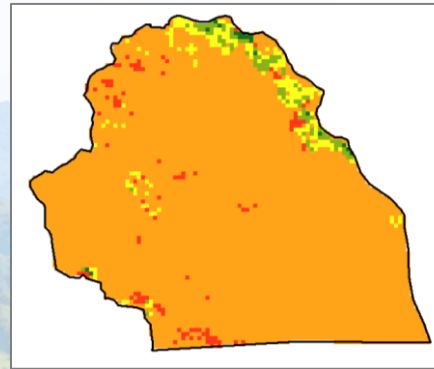
Pre-treatment

Post-treatment



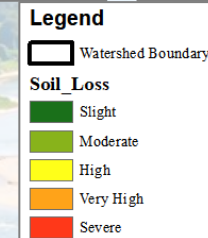
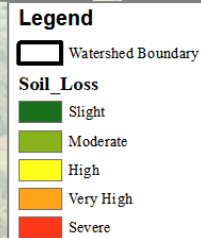
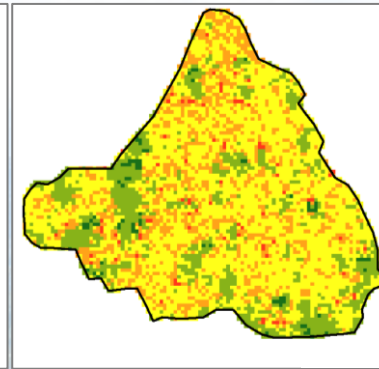
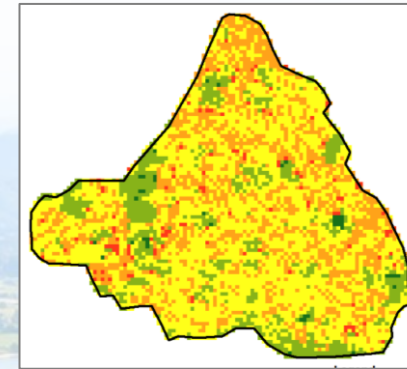
Pre-treatment

Post-treatment



Pre-treatment

Post-treatment



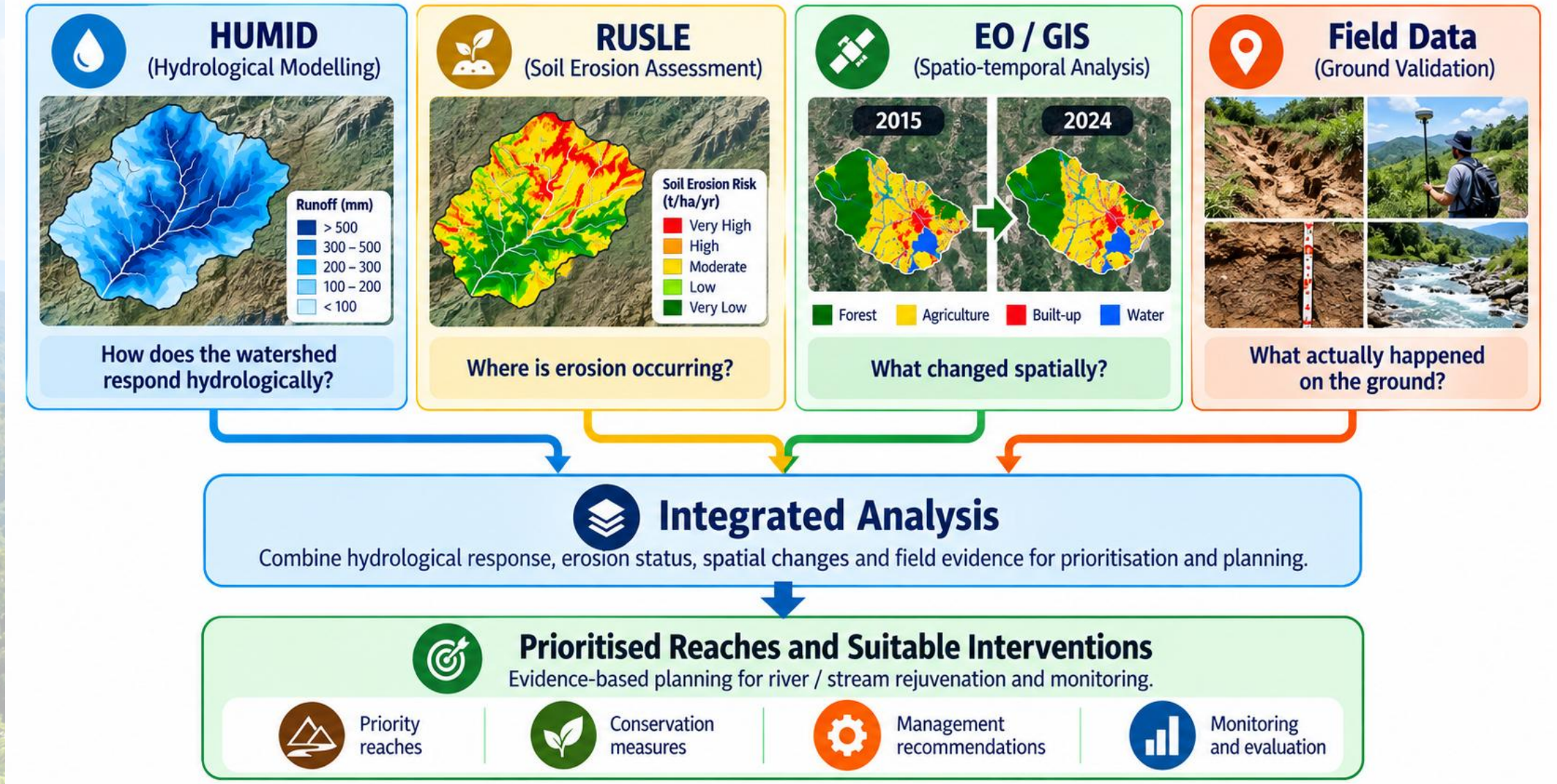
Severe erosion 9 → 1 km²

Severe erosion 19 → 5 km²

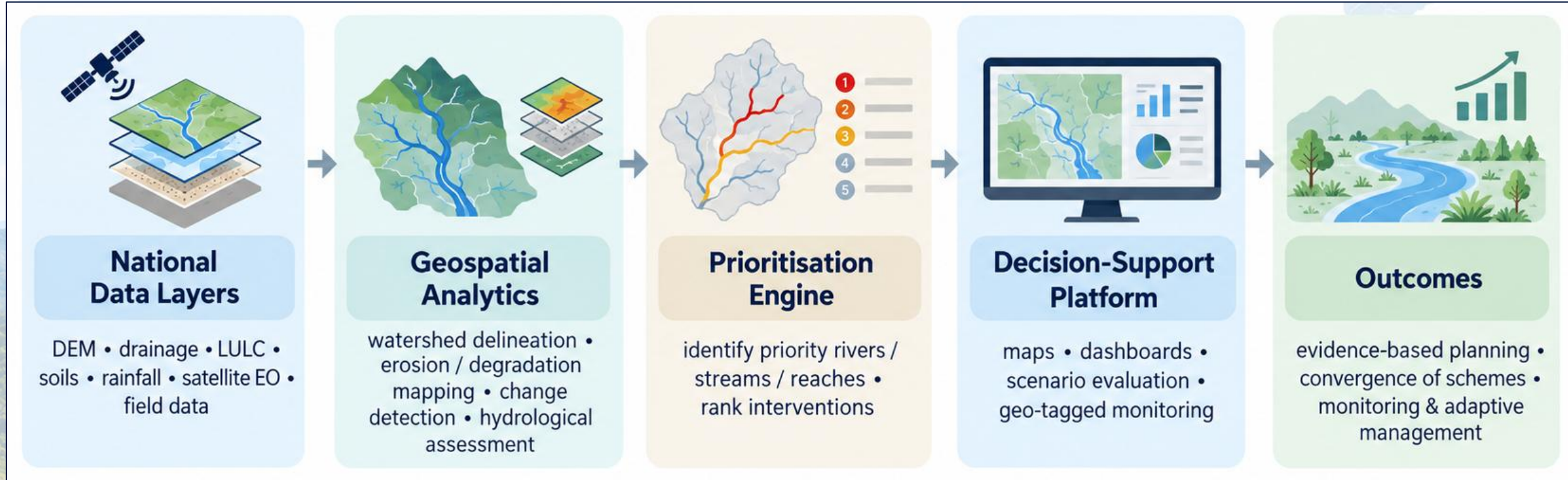
Severe erosion 8 → 0 km²

Spatial evidence of change due to impact of watershed treatment

Integrating HUMID + RUSLE + EO + Field Data



Towards a National Geospatial Decision-Support Framework



National Application

replicable workflow • basin to reach scale • supports rejuvenation planning across states