GEOSPATIAL WORLD FORUM
23-25 JANUARY, 2017, HYDERABAD, INDIA

Mapping Groundwater resources

Experience from the Nilgiris

Keystone
A GROUP FOR ECO-DEVELOPMENT INITIATIVES

The Nilgiris

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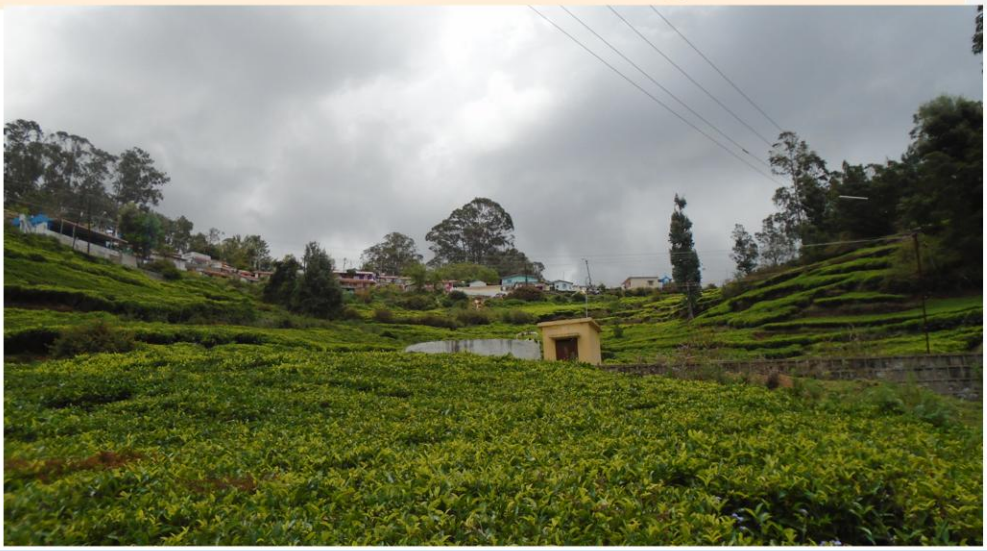
Pop – 7.35 Lakhs; Area – 2545 sq km; Alt – 300m to 2600m; 1350mm avg rainfall; source of rivers;
Nilgiri Biosphere Reserve; High Biodiversity, Tourism, Indigenous communities, Out migration, Second homes, landslides.
High dependence on groundwater. New drinking water sources are mostly groundwater based.

Groundwater in the Nilgiris



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All blocks are in the safe zone (CGWB)
Groundwater level declining in some parts of the District (District Groundwater Brochure, CGWB)
Aquifer characteristics
Traditional sources - Natural springs, streams, wetlands, open wells
New sources - Bore wells

Groundwater in the Nilgiris

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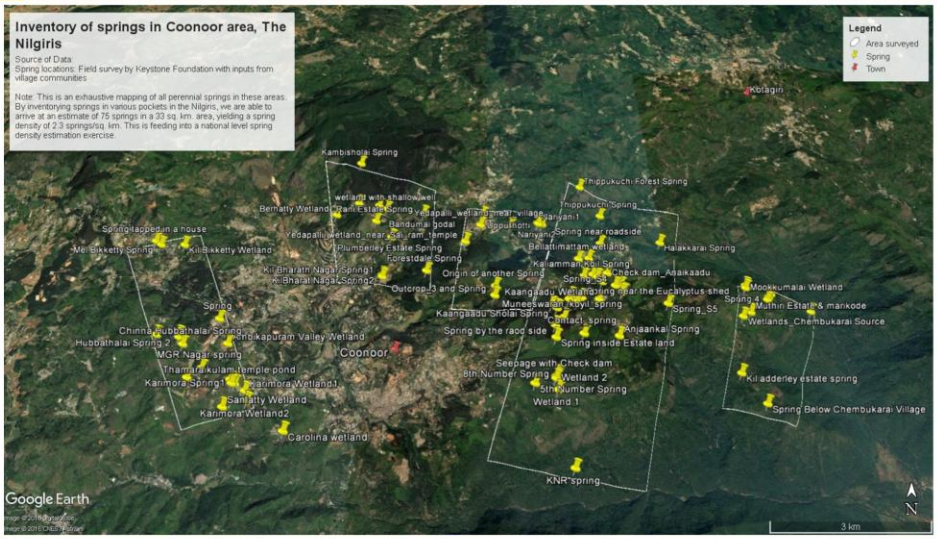
One poor monsoon leads to wells drying up in summer
Quality issues – Biological and chemical contamination of surface and groundwater
Official stats – 779 irrigation wells; 746 Drinking water wells
On the ground, 26 open wells in 300 acre Elada catchment; 20-odd wells in Happy Valley alone.

Springs



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Natural sources of groundwater discharge
Old habitations located close to them
Villages with spring water supply have better reliability and lower economic cost of supply
“Spring water is pure”, but now contaminated
No official list of springs or regular monitoring of discharge
Inventory exercise undertaken by Keystone as part of Springs Initiative

Small Hill Wetlands

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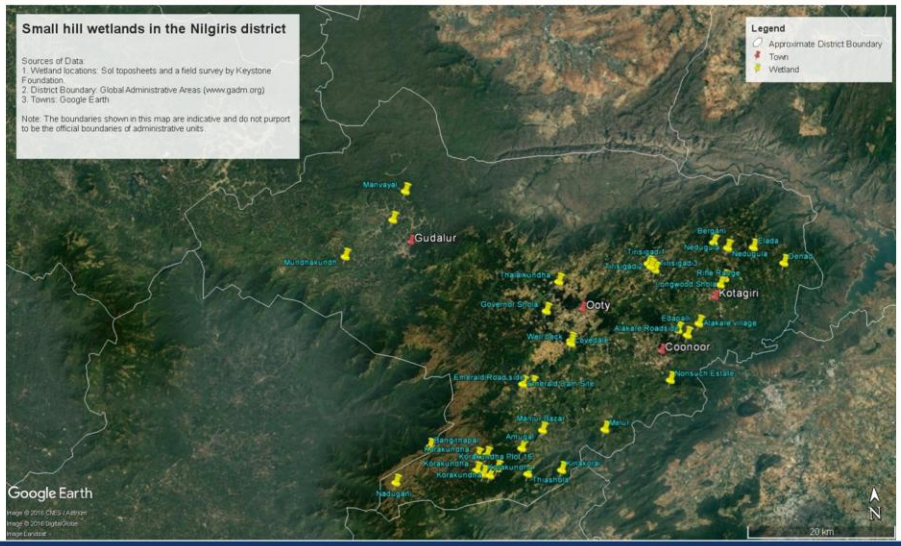
Multiple ecosystem services – biodiversity, water
Size – less than an acre to a few acres
Could be in forest, revenue wasteland or private land
No legal protection. Converted to other land uses. No monitoring of their status
Inventory of important wetlands in 2006

Wetland Inventory



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Small Hill Wetlands are neglected resources, often with little administrative protection, except where they are in Forest areas.
There exists no listing or database of these resources and they are rapidly disappearing under pressure from real estate, farming, tourism etc.

Land use and Groundwater

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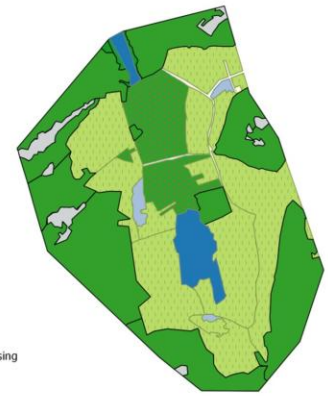
Land Use in the catchment of Elada Wetland

Category	Area (acres)
Tree cover	148
Tea	127
Farming	32
Wetland	14
Others	14
Total	335



Note: Derived from Google Earth using the imagery dated 4th Feb 2015.
By Keystone Foundation, Kotagiri.

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The state of the aquifer is directly dependent on the health of the catchment. The land use map of a catchment is thus an important tool to understand aquifer health. In this case, the catchment of a key water source of a small town in the Nilgiris is mostly exotic plantations such as Eucalyptus, Wattle etc. and tea plantations. This is not a healthy catchment that can sustain the groundwater flows in the long run.

Efforts on the ground

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Training community volunteers to inventory and monitor springs and wells
Profiling wetlands to highlight their importance and to conserve them
Working with village communities and Panchayats for ecorestoration of springsheds and catchments
Happy Valley in Kotagiri – 1 acre of springshed area restored in 2006. Providing water supply to the town even in drought conditions this year.

Conclusion

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Groundwater scenario is changing rapidly
Micro level changes may vary from district level stage of development
Technological advances need to be complemented with empowering of stakeholders
Need to monitor groundwater status locally – Extraction is not the only factor – Climate Change, Rainfall, land use etc. can influence the status.

Thank you

- http://keystone-foundation.org
- http://nilgiriswaterportal.in
- http://*www.indiawaterportal.org/topics/springs/spring-initiative*