Kenya Watershed Services Improvement Programme (KEWASIP): *where* to implement and *how* to select implementation sites

OUTLINE OF THE PRESENTATION

- Implementation Approach
- Criteria for Programme Sites Selection
- Update on Prioritization process for catchment selection
- Next steps

Implementation Approach

Implementation will adopt the **catchment approach** targeting critical ecosystems (forests, wetlands, protected areas, rangelands, water towers, riparian areas, agricultural lands)

Criteria for Programme Sites (Counties) Selection

Key Factors

- **Land Degradation levels** (hotspots, soil erosion and sedimentation, e.g. LADA assessment, Natural Resources Atlas and other related reports)
- **Water security**
- **Social vulnerability** (levels of income/population density/poverty headcount rate/food insecurity)
- **Climate Change Vulnerability**
- **Conservation Priorities** (biodiversity/habitat hotspots, ecosystems connectivity/ corridors, human-wildlife conflict hotspot areas, 5 Major water towers - Aberdares, Mau, Mt. Kenya, Chereng'any, Mt. Elgon)

Other factors to be considered;

- **Quick result areas** (quick wins)
- Areas already under GOK/Donor implementation
- Areas where there are minimal interventions
- **Upstream-Downstream interactions** (forested, farmlands and rangelands)
- Ongoing interventions at County level for upscaling (Priority plans at County)
- **Lessons learnt/learned from previous** projects

Catchment Prioritization Approach

Initial prioritization process for catchment selection has focused on land degradation levels and conservation priorities

Land Degradation levels

- Degradation levels determined by overlaying the land cover maps, elevation and slope data and precipitation

- Rationale : an area with **less vegetation cover, high rainfall and steep slope** (gradient) has a high likelihood of being degraded and the same area provides the opportunity for rehabilitation

- Classification into three levels depending on the weight of influence. This is set to range between 1-3 whereby '1' has little or no influence on degradation and '3' has the highest probability of being degraded.

Data & Format

- Data Used:
  – 2018 Land Cover (Landsat Satellite)
  – DEM (SRTM)
  – Evapotranspiration (ET)
  – Precipitation

- Data Specifications:
  – Format – Raster
  – Resolution – 30m
  – Projection: Arc60 UTM 37 S
  – Scale – National narrowed to Catchments
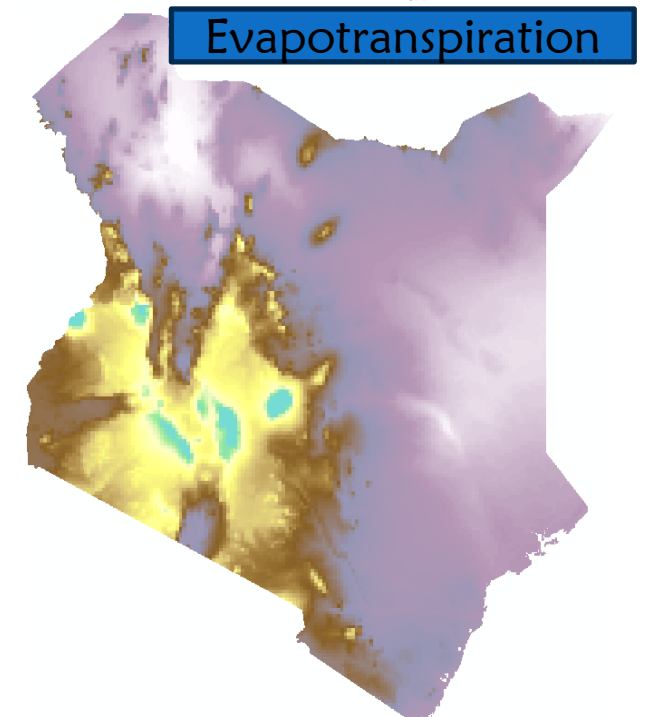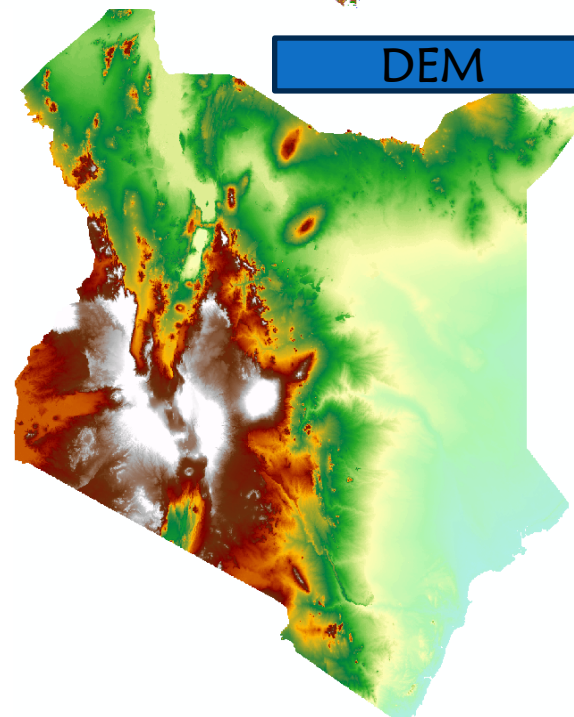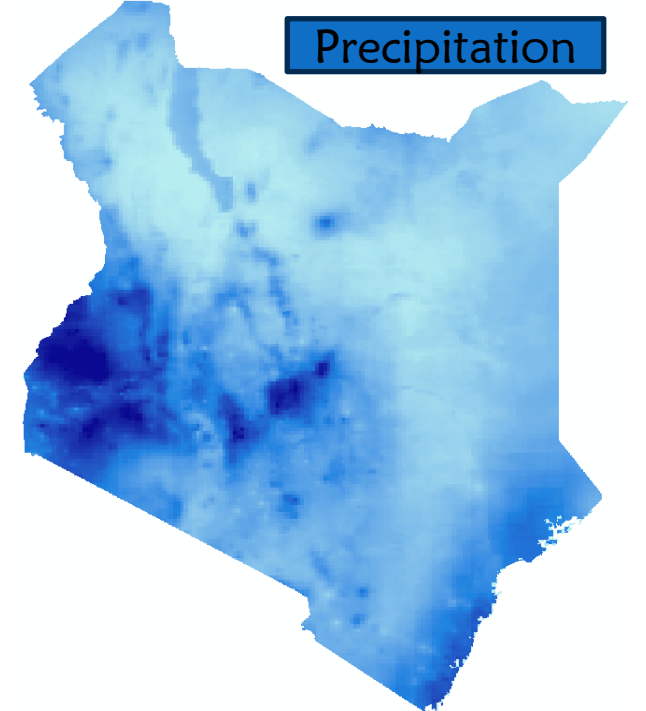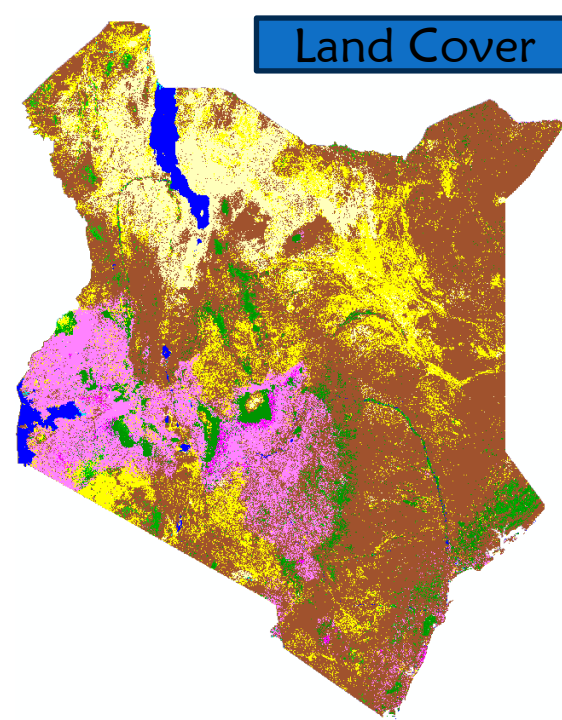
Site Selection Criteria

	Landover	Rank of influence
1	Dense Forestland	1
2	Moderate Forestland	1
3	Open Forestland	1
4	Wooded Grassland (Shrublands)	2
5	Open Grassland	2
6	Perennial Cropland	3
7	Annual Cropland	3
8	Vegetated Wetland	2
9	Open Water	1
10	Otherland (Baresoil, bare rock, Settlement)	3

DEM – Slope Degrees	Reclassify
0^0-8.5^0 (0%-5%	1
8.5^0-16.5^0 (15%-30%)	2
>16.5^0 (>30%	3

Rank of Influence	Rank of influence
1	No / little influence
2	Medium Influence
3	High influence

Dataset	Weight of Influence
Landcover	60%
Slope	40%

Site Selection Criteria - Cont

	Aridity classification	Annual Precipitation minus ET	Reclassify
	Arid	-6 - 530	1
Aridity classification based on annual rainfall distribution	Semi-arid	530 – 1,050	2
	Humid	1,050 – 2,238	3

Results

- Degradation Level – Raster

- Precipitation minus ET Raster
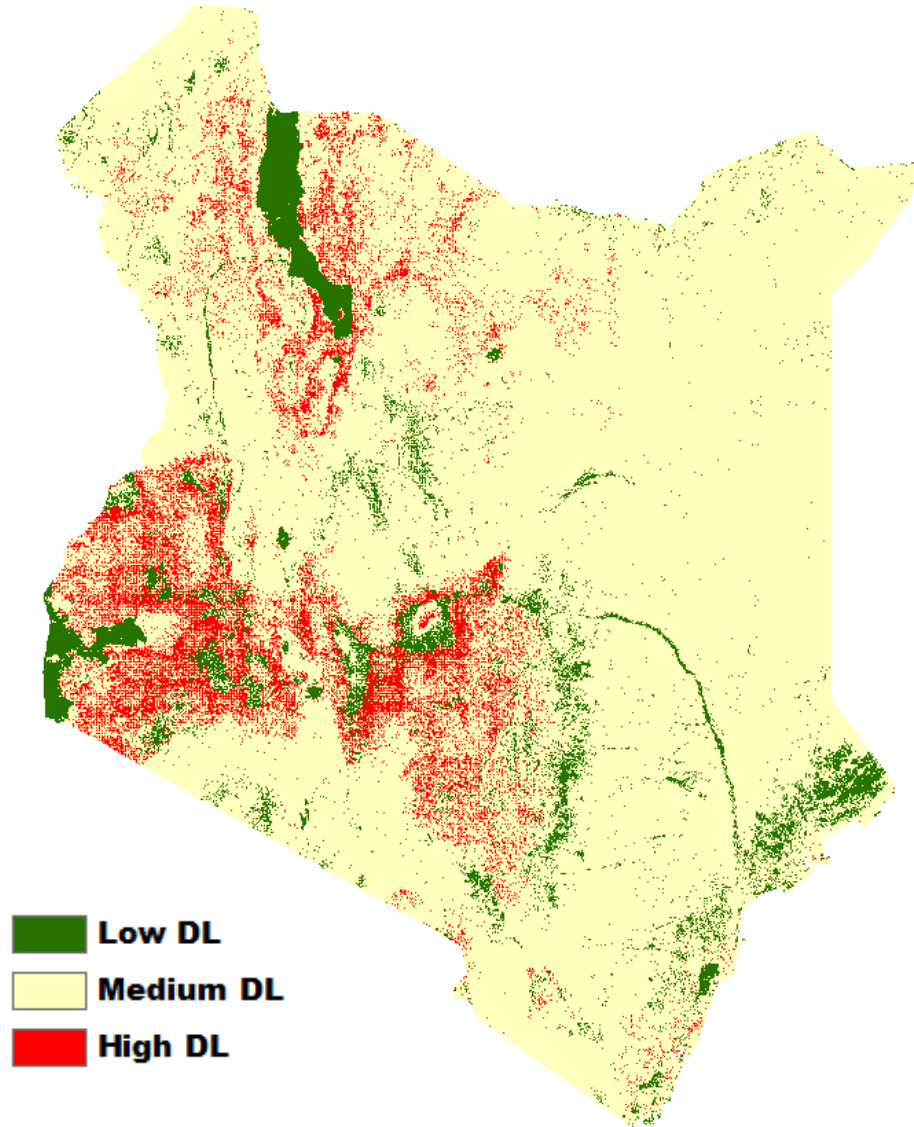
Low DL
Medium DL
High DL

Arid
Semi-Arid
Humid
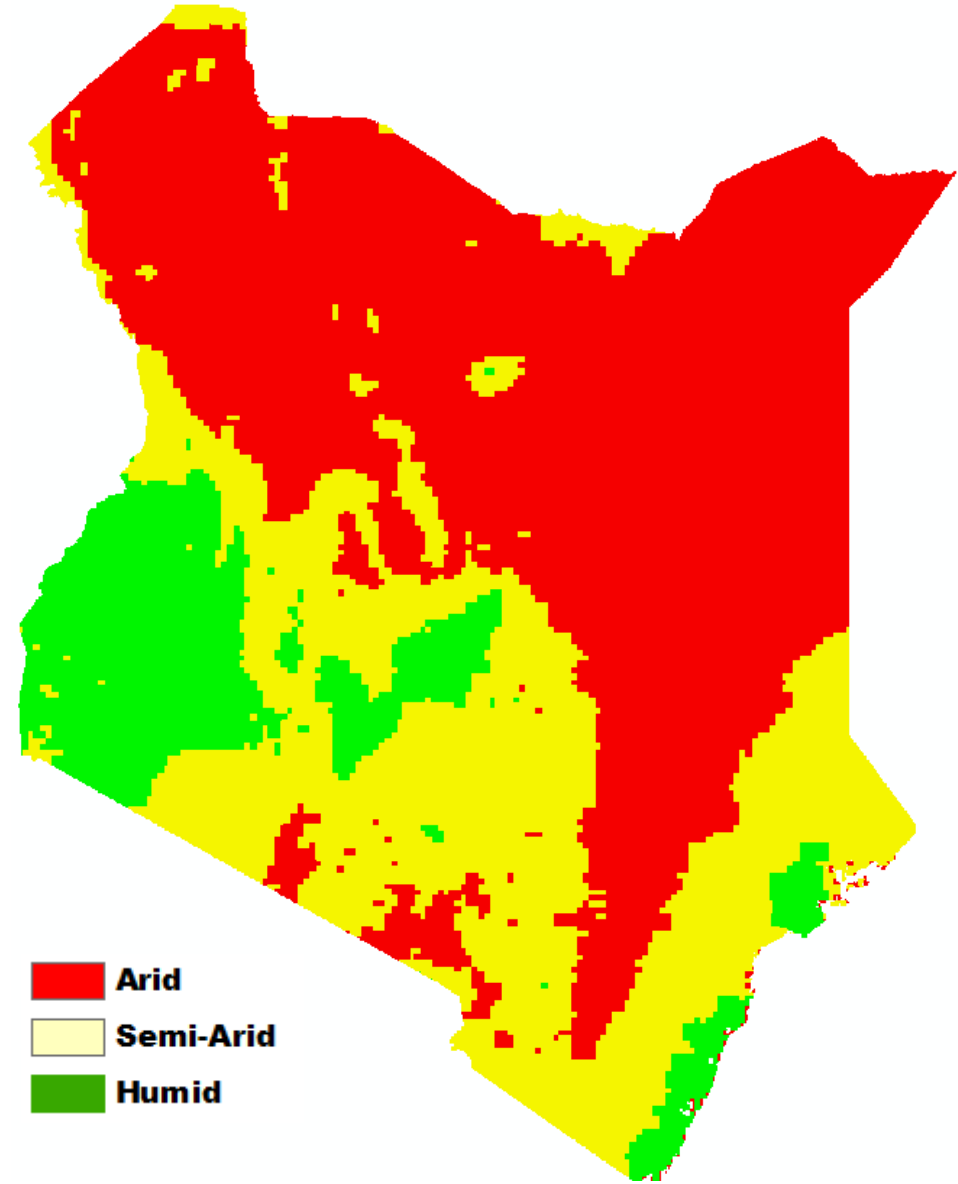
Results:

- Degradation + Precipitation minus ET (Arid at scale 1)

- Degradation + Precipitation minus ET (Arid at scale 3)

Low
Medium
High

Low
Medium
High
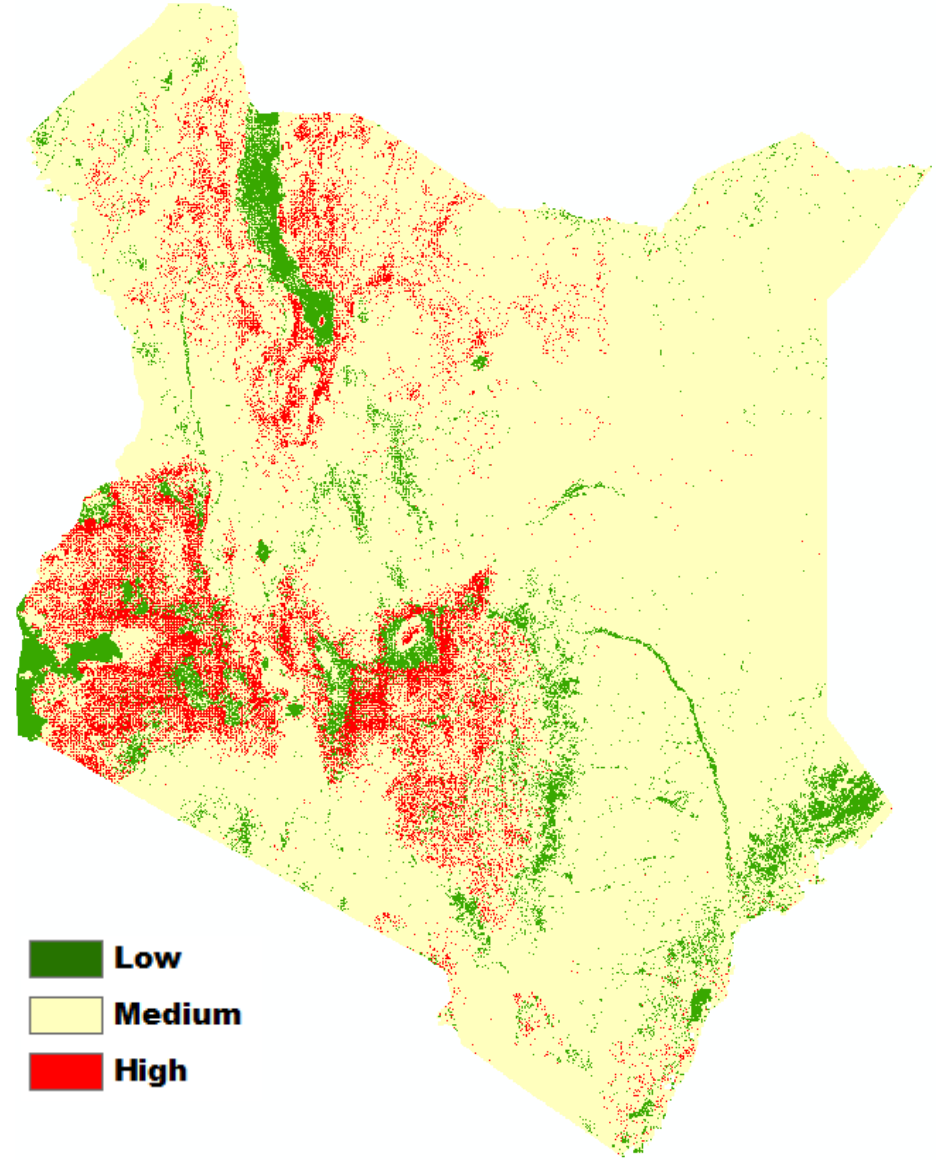
b)Conservation Priorities: Ranked Major Towers
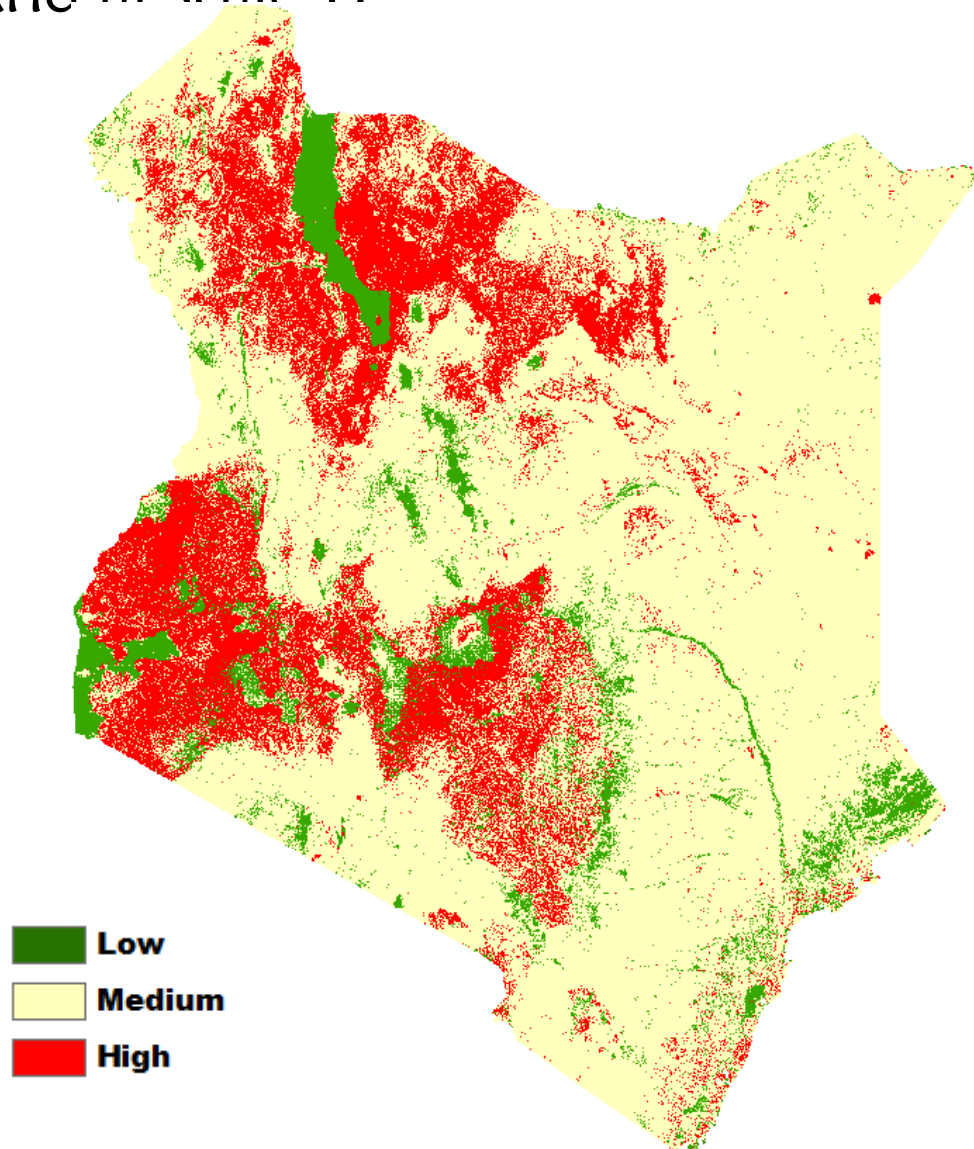
No	Water Towers	High DL [ha]	Medium DL [ha]	Low DL [ha]
1	Mau Forest Complex	181,434	188,322	157,326
2	Cherangany Hills + Elgeyo Hills	168,971	255,423	87,694
3	Aberdare Range	131,112	312,560	135,480
4	Mt Kenya	63,987	199,222	168,682
5	Mt Elgon	38,019	66,911	41,485

Ranked Other Water Towers

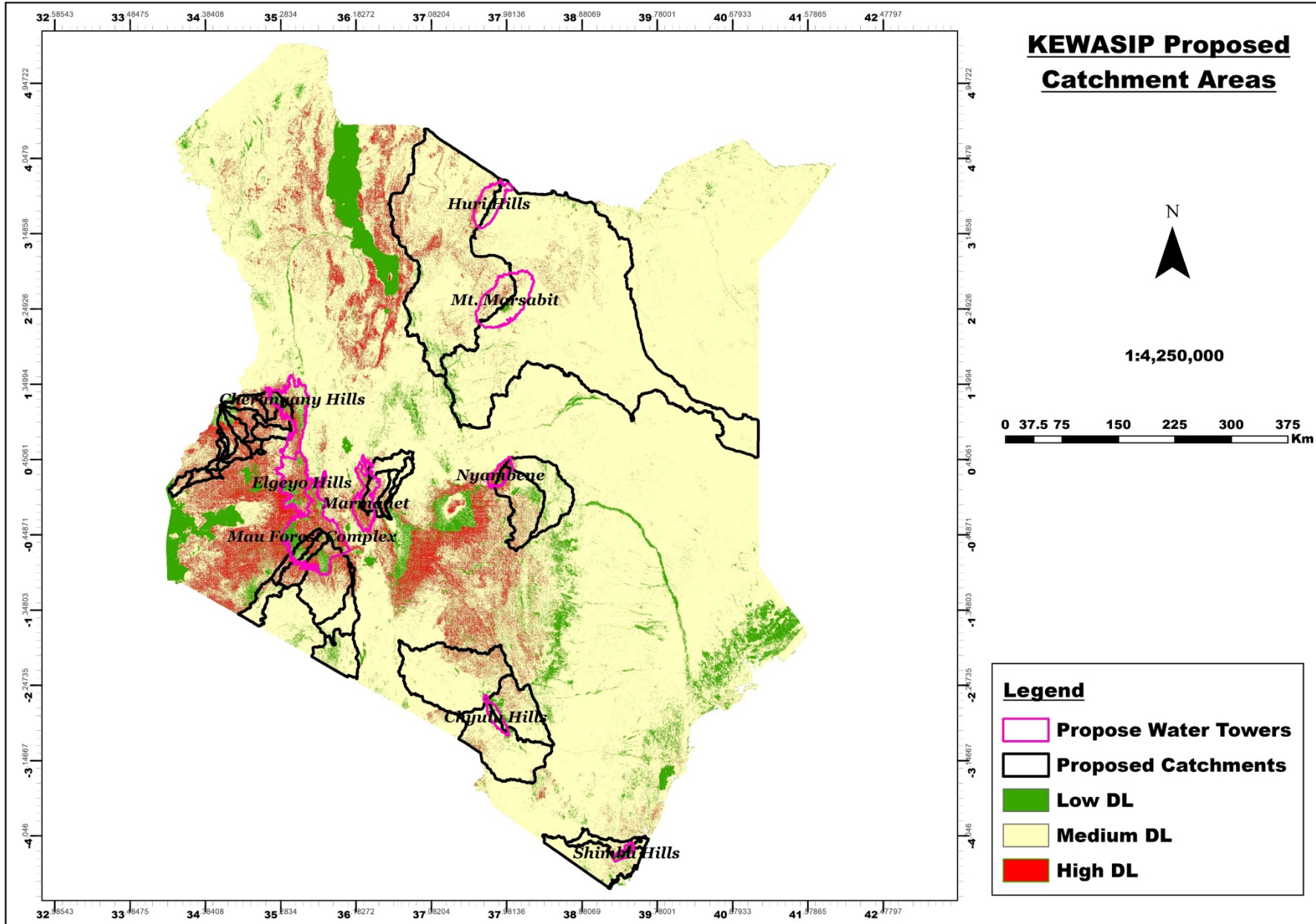| No	Water Towers	High DL [ha]	Medium DL [ha]	Low DL [ha]
1	Marmanet	67,733	99,272	12,079
2	Mt Marsabit	33,749	318,797	12,545
3	Nyambene	33,241	20,517	10,597
4	Huri Hills	16,533	145,590	2,376
5	Mt Kulal	12,742	80,567	8,366
6	Ndotos	552	95,164	22,008
7	Shimba Hills	445	14,220	14,892
8	Loita Hills	330	77,681	24,755
9	Mt Nyiru	185	35,230	11,092
10	Kirisia Hills	131	79,658	42,330
11	Matthews Range	57	80,041	39,713
12	Chyulu Hills	34	39,771	18,658

Proposed Sites-Selected Sub Catchments

	Water Towers	County	Sub Basin	Main Basin	Major Rivers	National Parks	Gazetted and community Forests	Wetlands
1	MFC - Mara Catchment	Bomet, Narok, Nakuru	1LA1, 1LA2, 1LB1	Lake Victoria South Basin Area	Mara	Masai Mara N.R.	Chepalungu, Eastern Mau, South West Mau, and Transmara	Dam 99, Swamps 16, Water pan 72 and Water pond 8
2	MFC - Ewaso Ngiro Catchment	Kajiado, Narok	2KA, 2KB, 2KC	Rift Valley Basin Area	Ewaso Ngiro	None	Eastern Mau, Mau Narok, Ol Pusimoru, Southern Mau, Maasai Mau, and Loita	Fresh water marsh 3(Trib. Ewaso N'Giro South and North, Ziwa Kambe), Dams 27, Swamps 23, and Water pans 97
3	Marmanet - Ewaso Narok Catchment	Laikipia	5AA, 5AB, 5AC, 5AD	Ewaso Ngiro North Basin Area	Ewaso Narok	Aberdare N.P.	Lariak, Marmanet, Ndaragwa, Rumuruti, Uaso Narok	Fresh water marsh 2, Dams 226, Swamps 30, and Waterpans 92
4	Marsabit - Huri Catchment	Marsabit, Samburu	5J, 5EC	Ewaso Ngiro North Basin Area	Laga Segel	Marsabit N.R., Marsabit N.P. and Losai N.R.,	Mount Kulal, Marsabit, Mount Nyiro, Ndotos Range, Mathews Range	Fresh water marsh 7, Salt pan 2, Dams 23, Swamps 282, and Waterpans 53
6	Nyambene	Garissa, Kitui, isiolo, Tana River, Tharaka Nithi, Meru	4FB, 4GA	Tana Basin Area	Tana,	Bisanadi N.R., Meru N.P., North Kitui N.R., Kora N.P.	Gaikuyu, Gitugu, Kauru, Kikingo, Maatha, Mutejwa, Ngaia, Nyambeni, Rwara Wa Takiutha, Thuuri and Muumoni	Fresh water marsh 2, Dams 36, Swamps 10, and water Pans 1
7	Shimba Hills	Taita Taveta, Kwale, Mombasa	3K, 3MC, 3MD2	Athi Basin Area	Ramisi, Mukurumudzi	Shimba Hills N.R.	Buda, Gonja, Jombo, Maluganji, Marenji, Mrima, Shimba Hills, and South Coast Mangroves	Dams 34, Swamps 25, Waterpans 47 and Water ponds 4
8	Chyulu - Tsavo-Athi Catchment	Kajiado, Makueni	3FA, 3FB, 3G	Athi Basin Area	Tsavo, Athi	Tsavo West N.P., Chyulu Hills N.P., Ngai Ndethia N.R.	Kiongwani, Kioo, Kyemundu, Loitokitok, Makuli Nguuta, Nzaui and Mwaganini	Dams 104, Swamps 48, and Waterpans 76

Total: 8 Water Towers & 19 Counties

Proposed Sites-Selected Sub Catchments

KEWASIP Proposed Catchment Areas

N

1:4,250,000

0 37.5 75 150 225 300 375 Km

Legend
- Propose Water Towers
- Proposed Catchments
- Low DL
- Medium DL
- High DL

Map labels: Huri Hills, Mt. Marsabit, Cherangany Hills, Elgeyo Hills, Marmanet, Mau Forest Complex, Nyambene, Chyulu Hills, Shimba Hills

1	Bomet
2	Garissa
3	Isiolo
4	Kajiado
5	Kitui
6	Kwale
7	Laikipia
8	Makueni
9	Marsabit
10	Meru
11	Mombasa
12	Nakuru
13	Narok
14	Nyandarua
15	Samburu
16	Taita Taveta
17	Tana River
18	Tharaka Nithi
19	Wajir

Next Steps

I. Create data repository

II. Refine the prioritization process

- Integrate other data sets such as on **Social vulnerability** (levels of income/population density/poverty headcount rate/food insecurity **Climate Change Vulnerability, water insecurity**

III. Finalize catchment selection methodology – (documentation)

IV. Spatial Analytics for the selected catchments

THANK YOU!