

CONSERVATION
SOUTH AFRICA

Member of the CI Network



Protecting Ecological Infrastructure to support Ecosystem-Based Adaptation to Climate Change in the Alfred Nzo District

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Today's talk

- Outline planning undertaken for Conservation South Africa and Alfred Nzo District Municipality
- Umzimvubu Catchment
- Identification of Ecological Infrastructure and areas important for Ecosystem-based Adaptation to Climate Change to support landscape management initiatives, municipal planning and climate proofing the district.

Ecosystem-based Adaptation

“the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change”

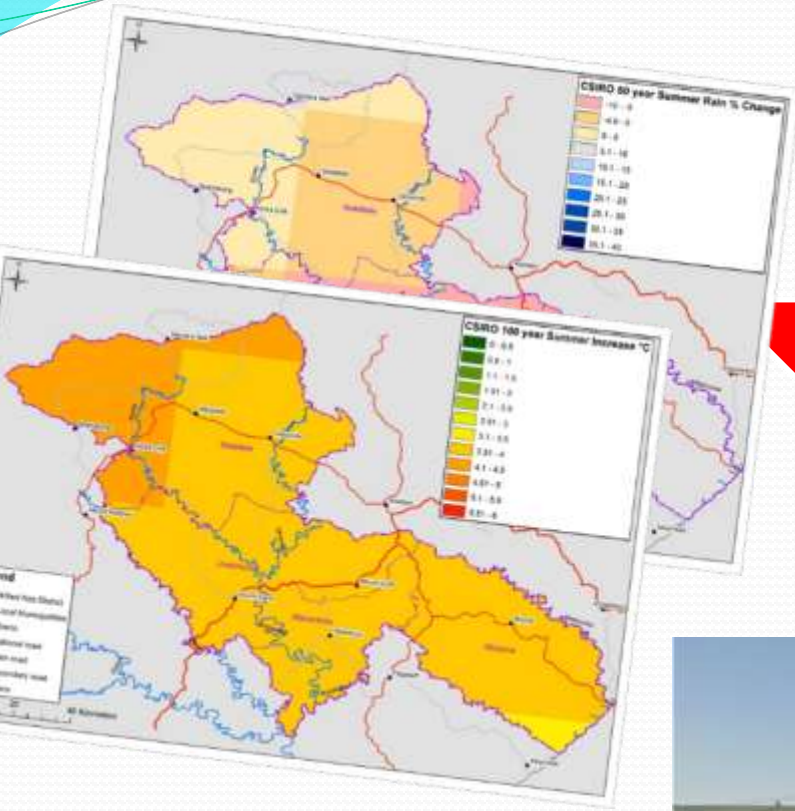
Ecological Infrastructure

“functioning ecosystems that deliver valuable services to people

e.g fresh water, climate regulation, soil formation and disaster risk reduction”



Some nasty climate impacts



High
disaster risk

Rural

Poor

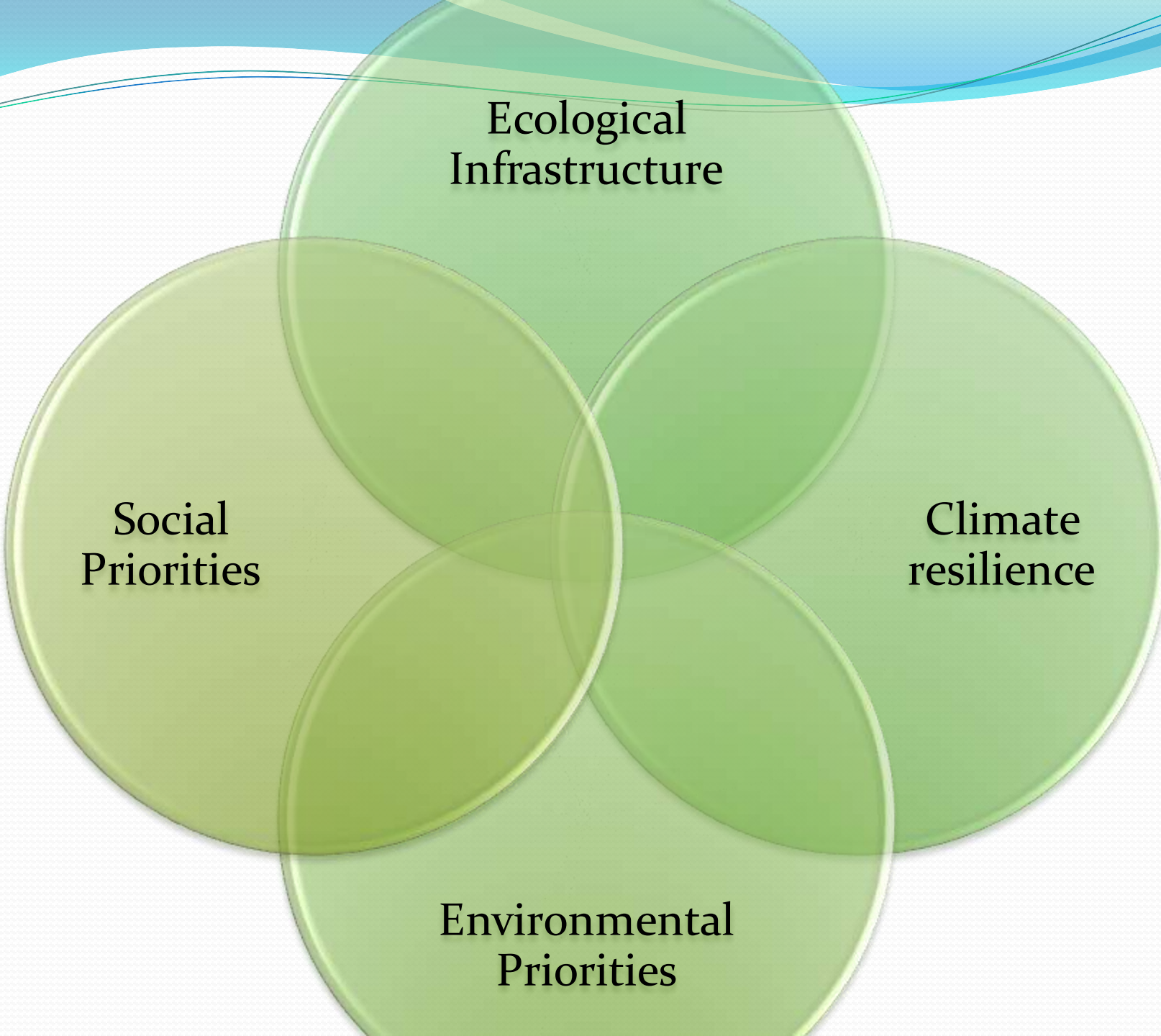
Strong direct
environmental
dependencies

Extreme social
vulnerability



Integrated prioritization

- Which areas are important for the environment to adapt?
- Which areas are important for other environmental reasons?
- Which areas are important Ecological Infrastructure for helping people adapt?
- Where is there most social need for intact Ecosystem Services?
- Where do these overlap?



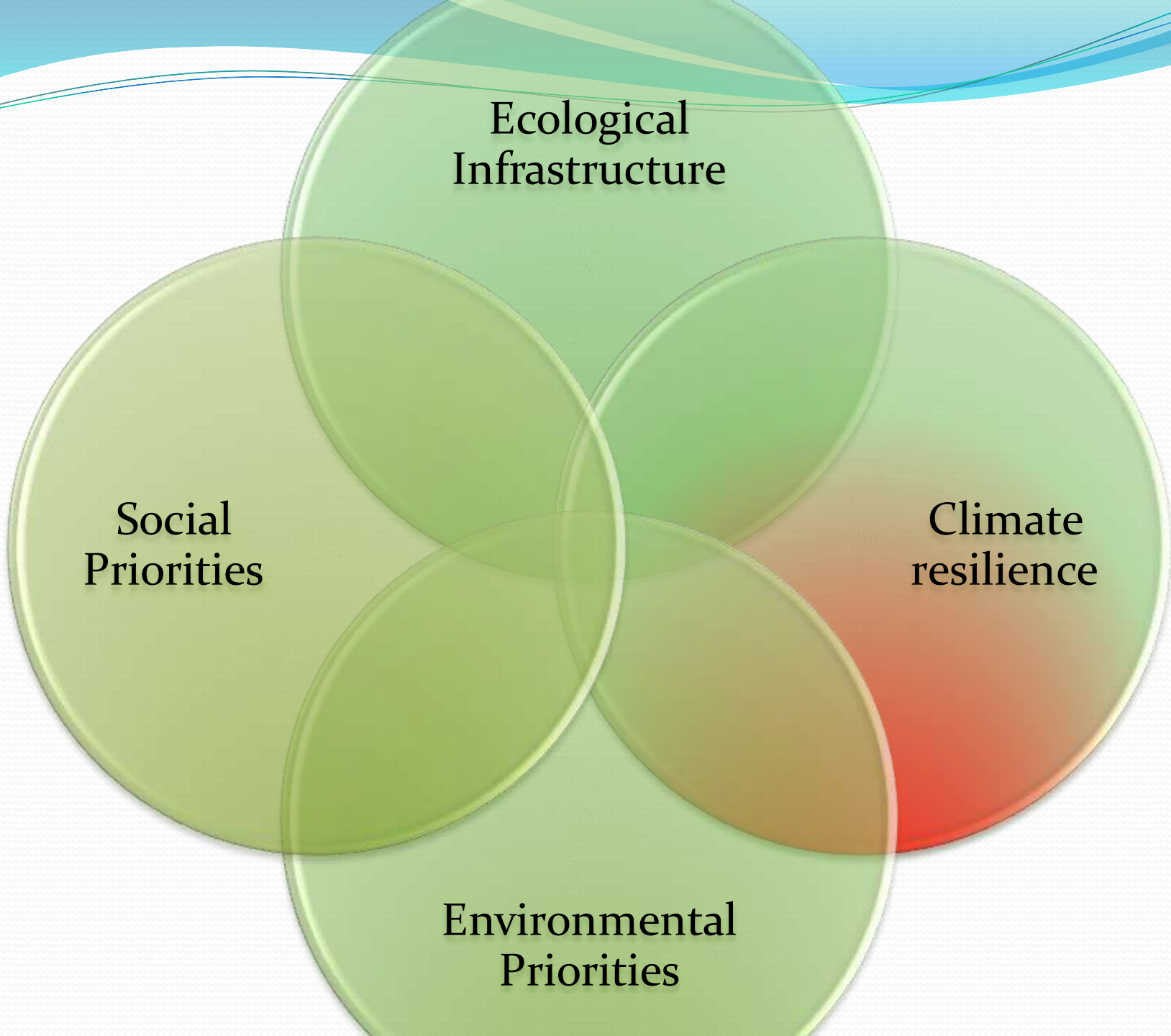
A Venn diagram consisting of four overlapping circles arranged in a square pattern. The top circle is labeled 'Ecological Infrastructure', the left circle 'Social Priorities', the right circle 'Climate resilience', and the bottom circle 'Environmental Priorities'. The circles overlap in various combinations, creating a central area where all four intersect and several other areas where two or three intersect. The background features a light blue and white wavy pattern at the top.

Ecological
Infrastructure

Social
Priorities

Climate
resilience

Environmental
Priorities



Ecological
Infrastructure

Social
Priorities

Climate
resilience

Environmental
Priorities

Gradients

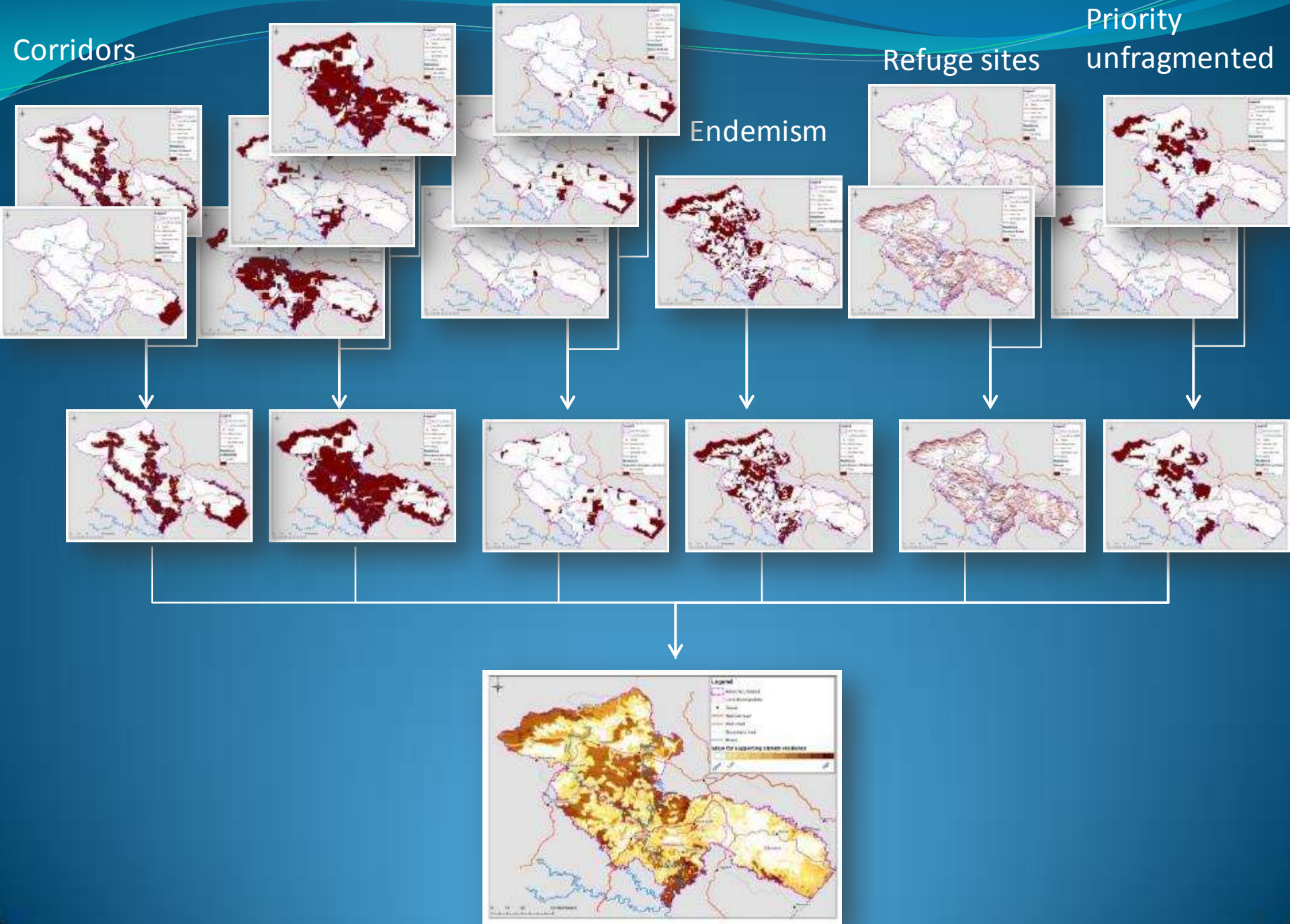
Diversity

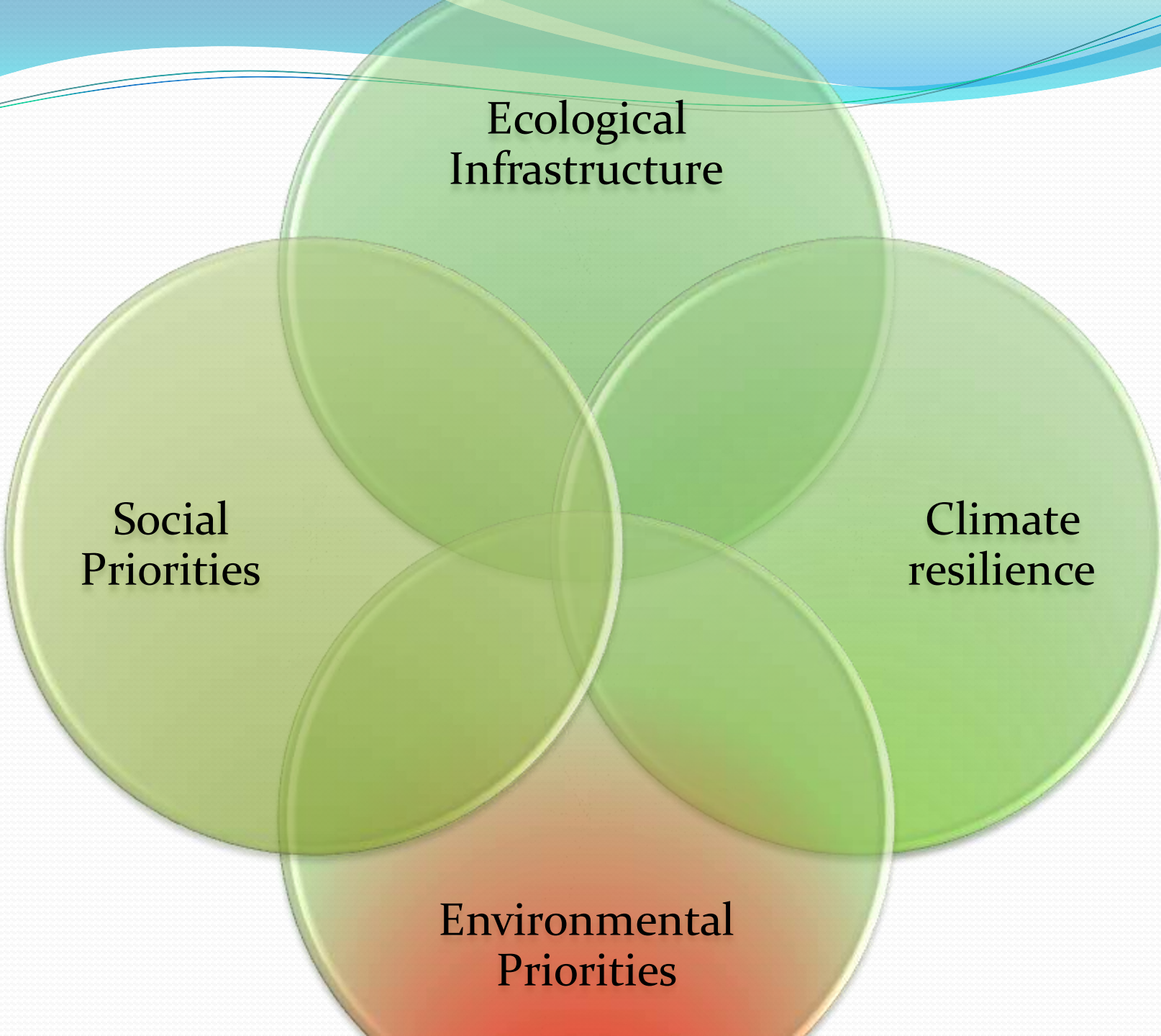
Priority
unfragmented

Refuge sites

Endemism

Corridors





A Venn diagram consisting of four overlapping circles. The top circle is light green and labeled 'Ecological Infrastructure'. The left circle is a slightly darker green and labeled 'Social Priorities'. The right circle is a medium green and labeled 'Climate resilience'. The bottom circle is a brownish-orange and labeled 'Environmental Priorities'. All four circles overlap in a central region. The background features a white field with a blue wavy line at the top.

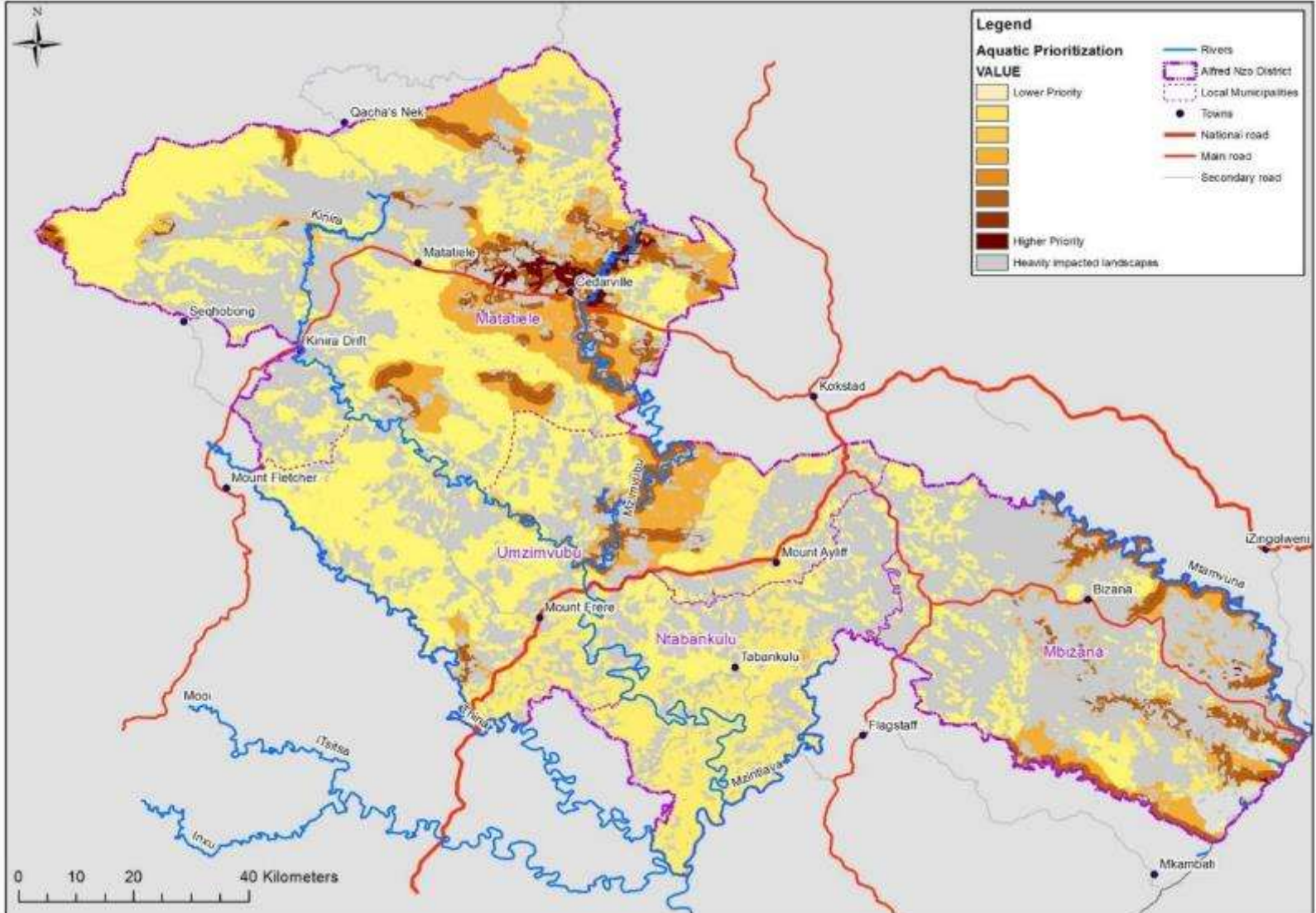
Ecological
Infrastructure

Social
Priorities

Climate
resilience

Environmental
Priorities

e.g. Aquatic priorities



Priorities from
other plans

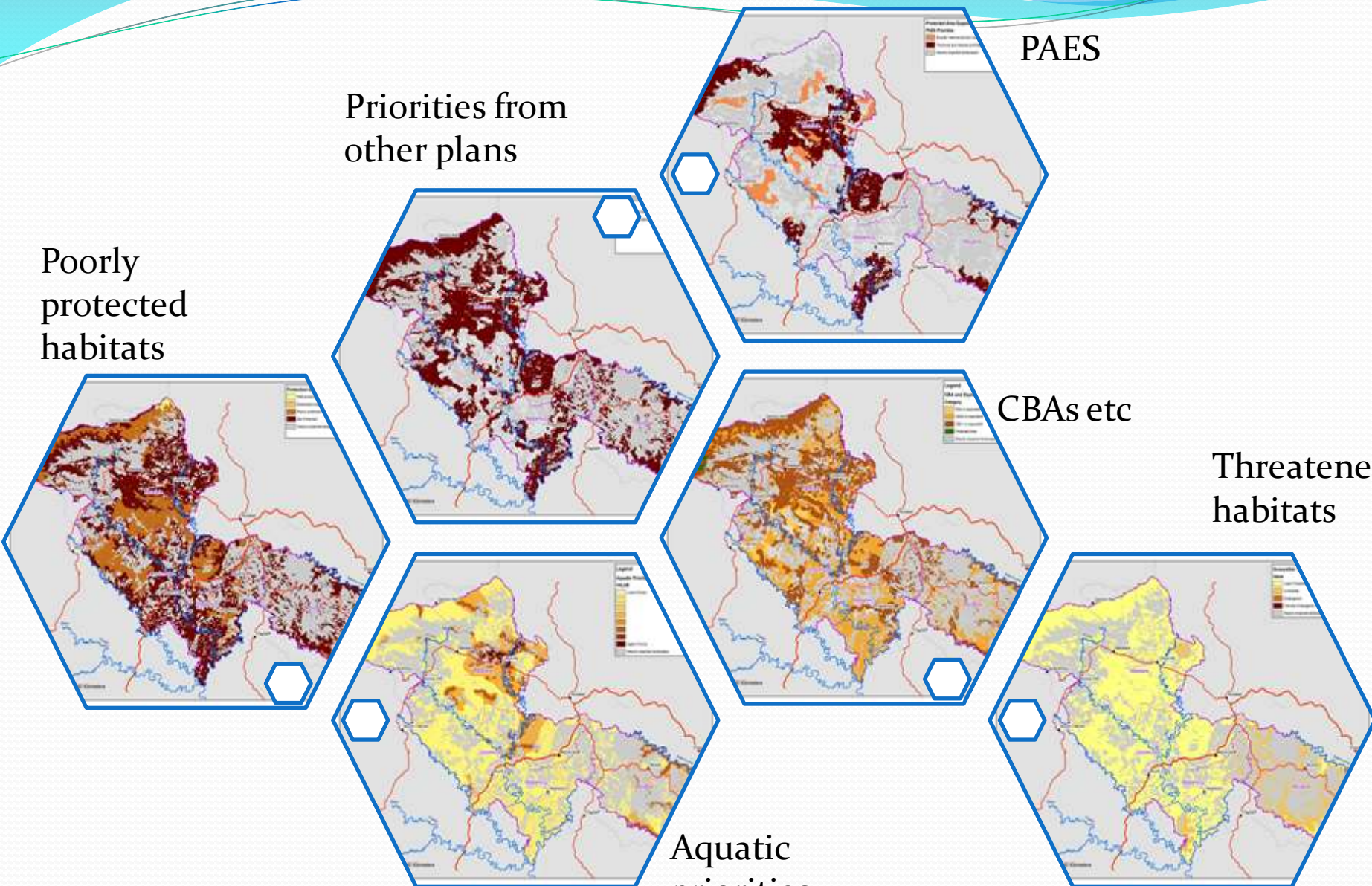
Poorly
protected
habitats

PAES

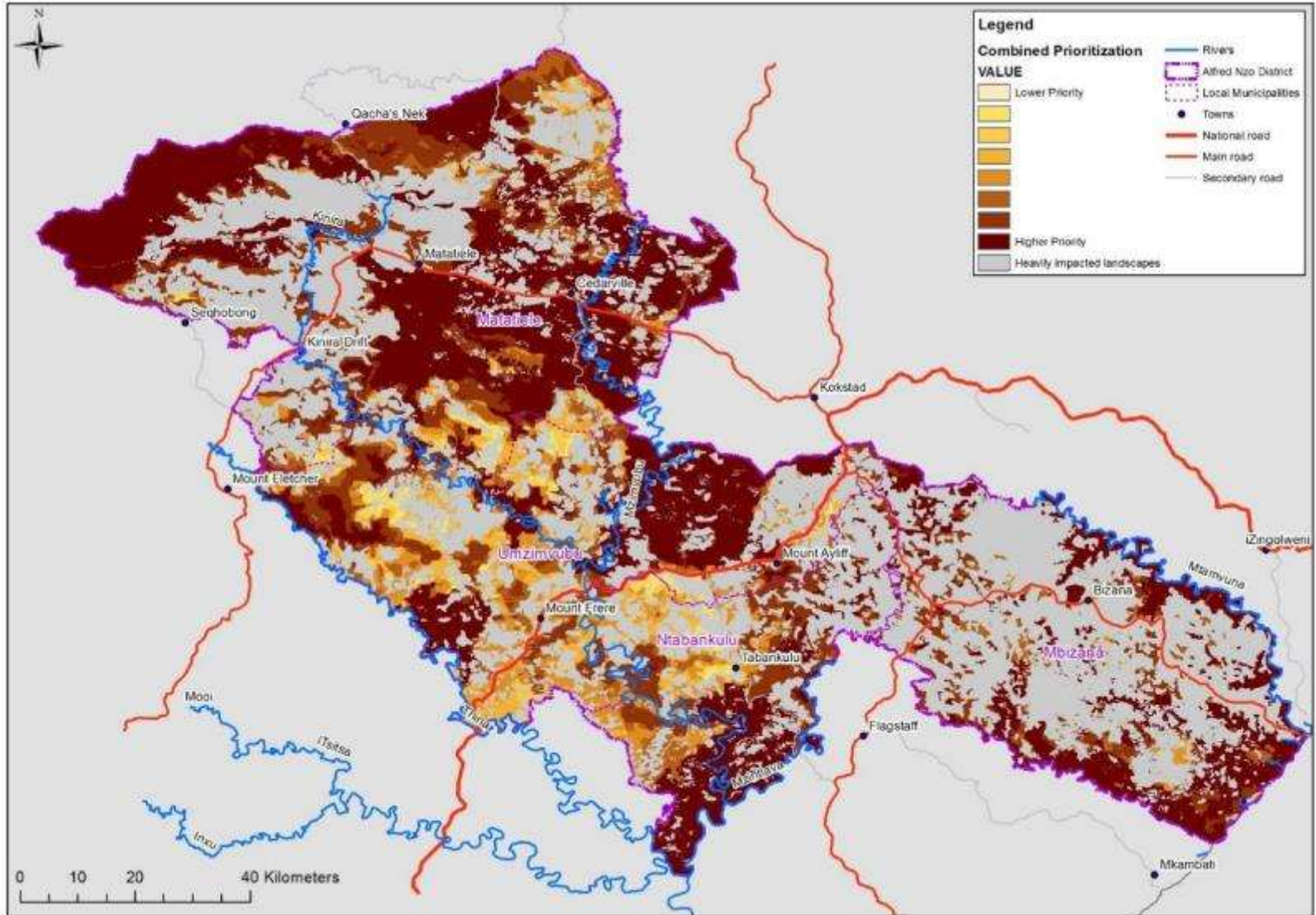
CBAs etc

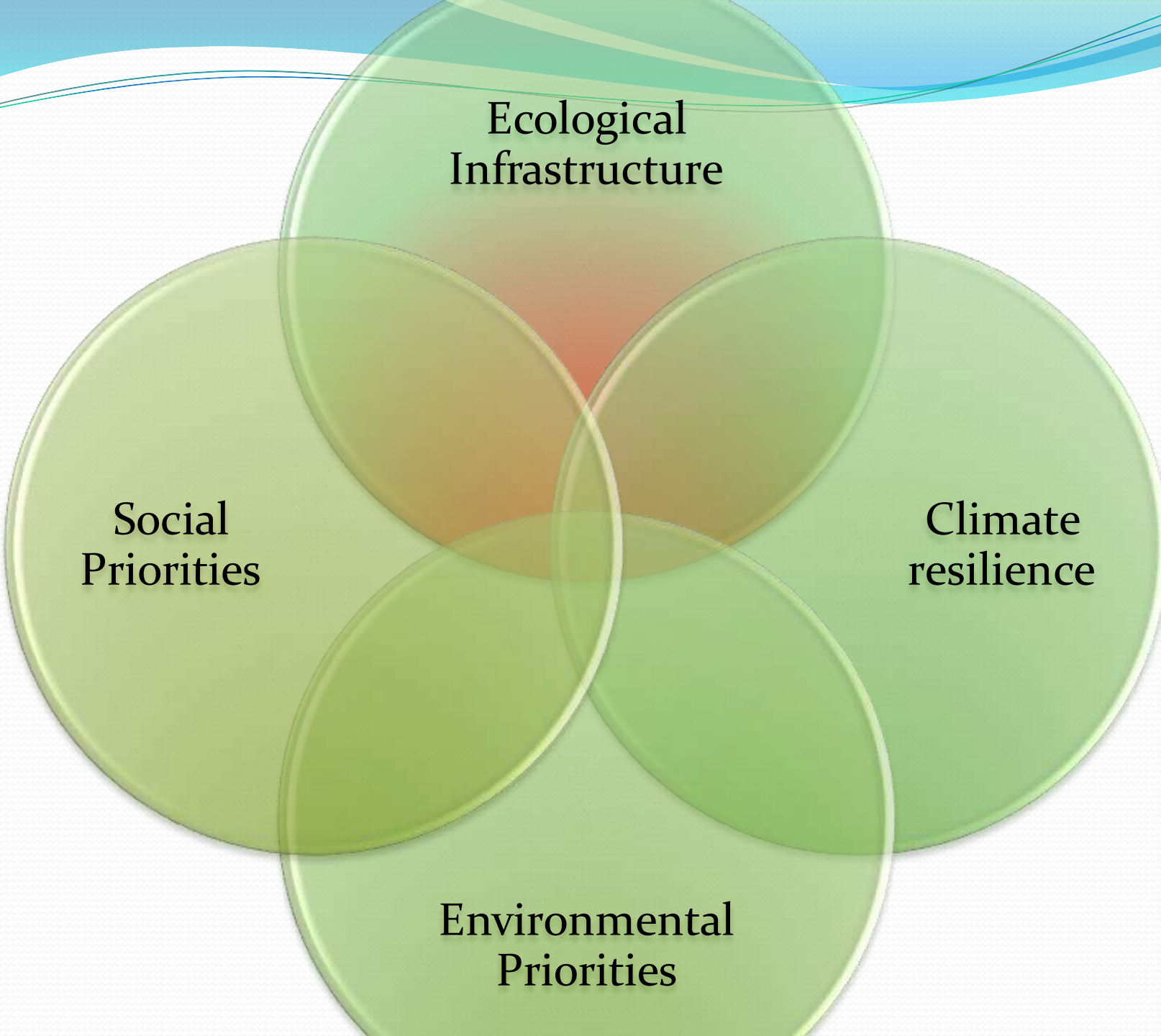
Threatened
habitats

Aquatic
priorities,
FEPAs etc



Combined prioritization





A Venn diagram consisting of four overlapping circles. The top circle is labeled 'Ecological Infrastructure', the left circle 'Social Priorities', the right circle 'Climate resilience', and the bottom circle 'Environmental Priorities'. The circles overlap in various combinations, with the central intersection of all four circles being a darker shade of green. The background features a light blue and white wavy pattern at the top.

Ecological
Infrastructure

Social
Priorities

Climate
resilience

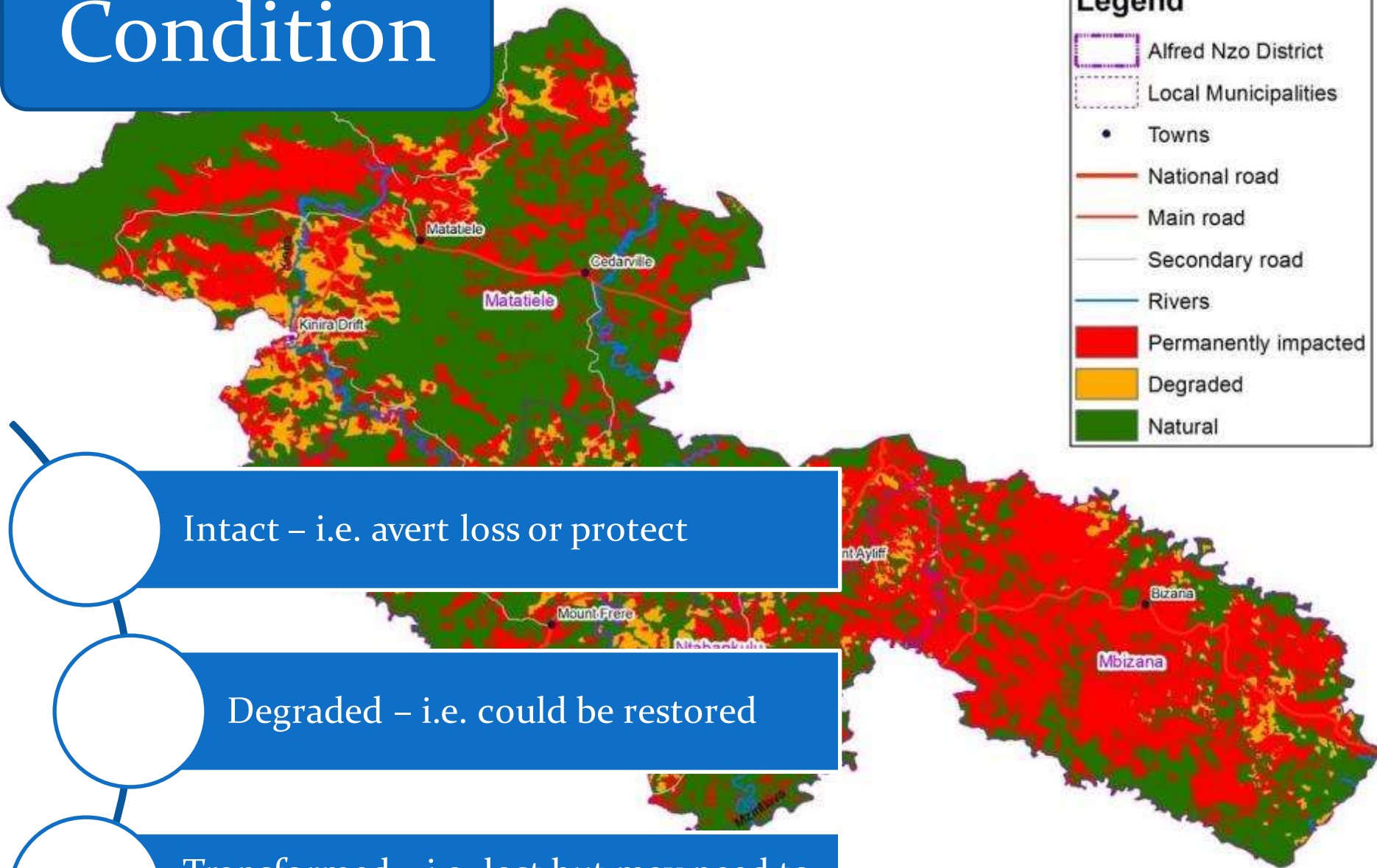
Environmental
Priorities

ECOLOGICAL INFRASTRUCTURE

- **Functioning ecosystems that deliver valuable services to people**
 - e.g. fresh water, climate regulation, soil formation and disaster risk reduction.
- **Ecological infrastructure includes**
 - healthy mountain catchments, rivers, wetlands, coastal dunes, nodes & corridors of natural habitat, which form a network of interconnected structural elements in the landscape.



Condition

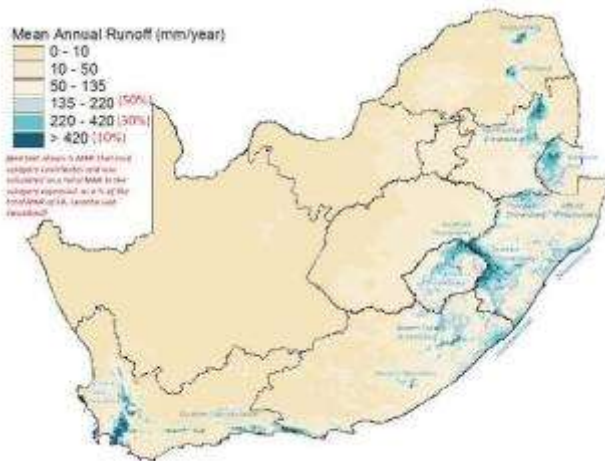


Intact – i.e. avert loss or protect

Degraded – i.e. could be restored

Transformed – i.e. lost but may need to manage to deal with negative impacts

Water production & stream flow augmentation



Water production & stream flow augmentation

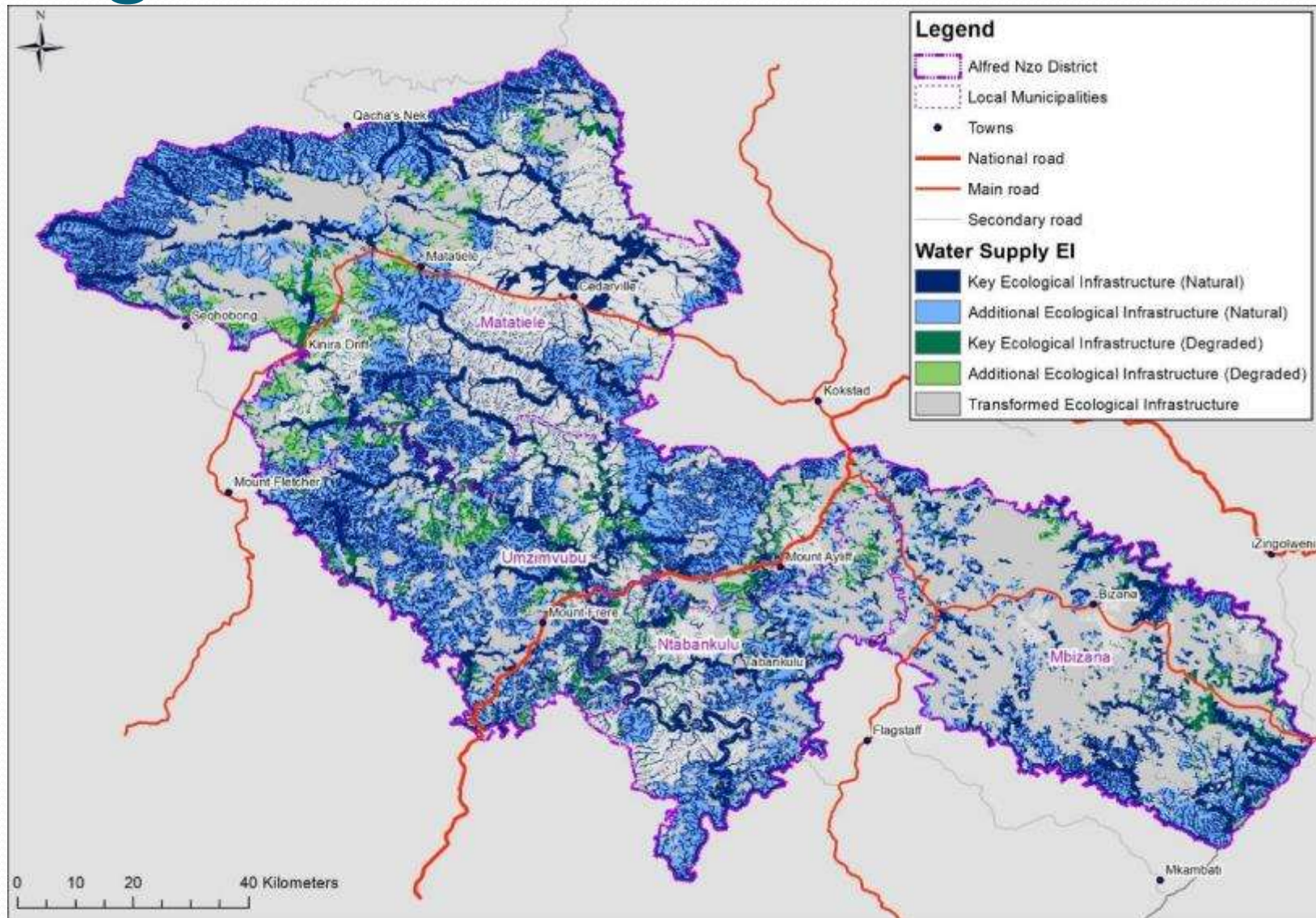
			Intact Ecological Infrastructure	Degraded Ecological Infrastructure	Lost Ecological Infrastructure
In high yield areas (over 115mm runoff)	Rivers	Riparian buffers (100m minimum; 500m larger rivers)	2	2	1
	Terrestrial areas	All natural habitat types (as per landcover)	1		
		Degraded areas (as per landcover)		1	
		Transformed areas (as per landcover)			1
	Wetlands	All natural wetlands	2	2	1
In lower yield areas (under 115mm runoff)	Rivers	Riparian buffers (32m minimum; 500m larger rivers)	2	2	1
	Wetlands	All natural wetlands	2	2	1

Values:

2 = Key ecological infrastructure

1 = Other Ecological Infrastructure

Water production & stream flow augmentation



Flood attenuation

			Intact Ecological Infrastructure	Degraded Ecological Infrastructure	Lost Ecological Infrastructure
Flood attenuation					
Rivers	Rivers	Riparian buffers (250m on larger rivers, 100m on smaller but perennial rivers)	1	1	1
Wetlands	Wetlands specifically important for flood attenuation	Channelled valley-bottom wetland with 50m buffer	1	1	1
		Floodplain wetland with 100m buffer	2	2	1
		Pans (Depression & flat) with 50m buffer	1	1	1
		Seep with 50m buffer	1	1	1
		Unchannelled valley-bottom wetland with 50m buffer	1	1	1
		Valleyhead seep with 50m buffer	1	1	1

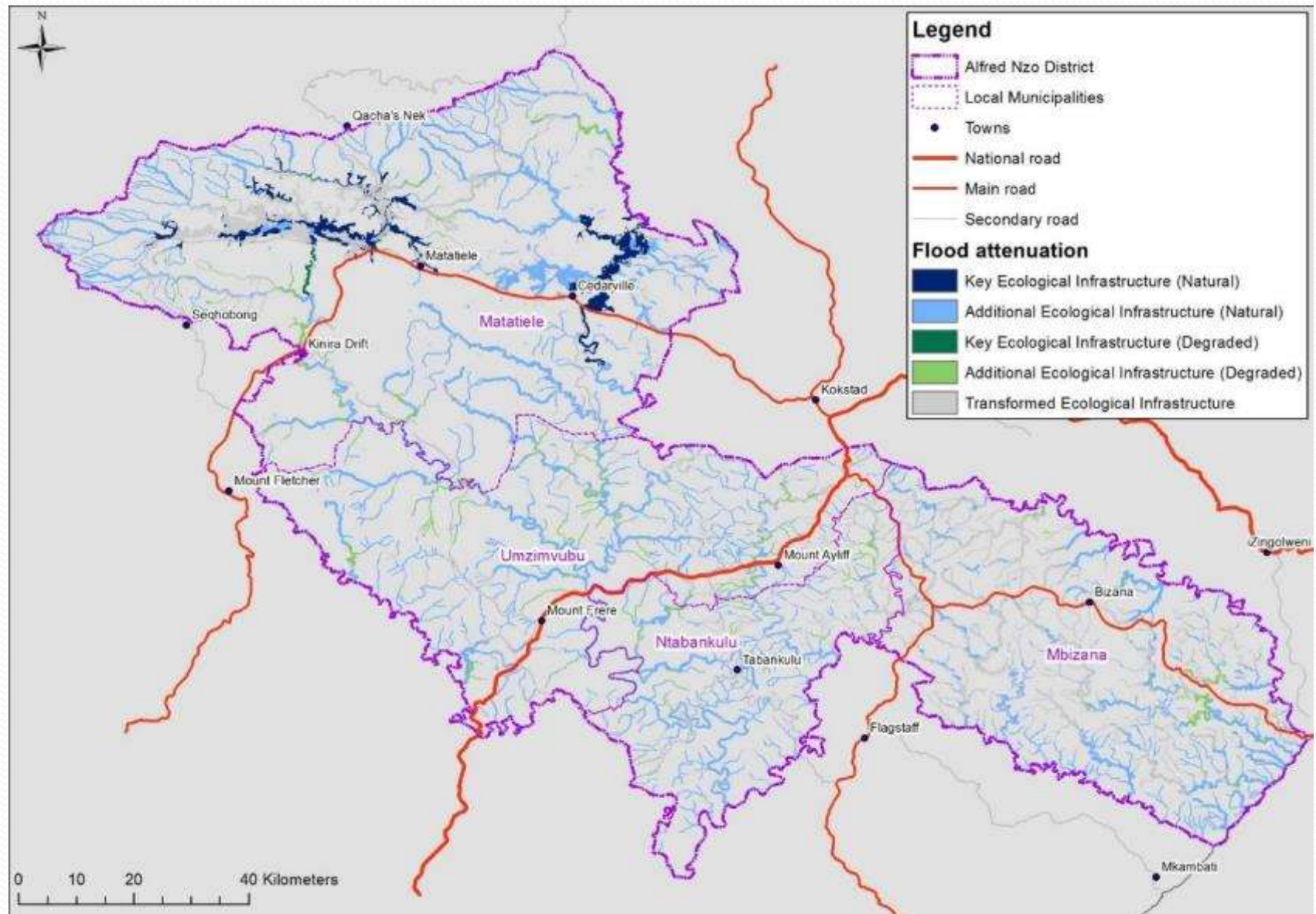
Values:

2 = Key ecological infrastructure

1 = Other Ecological Infrastructure

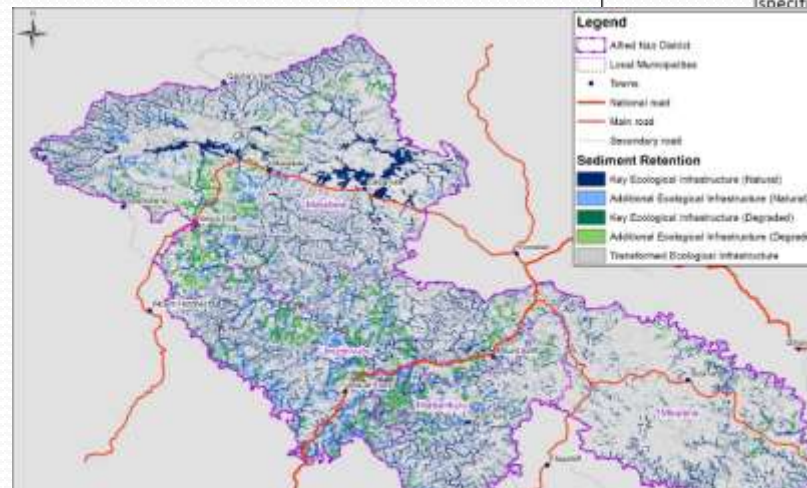


Flood attenuation



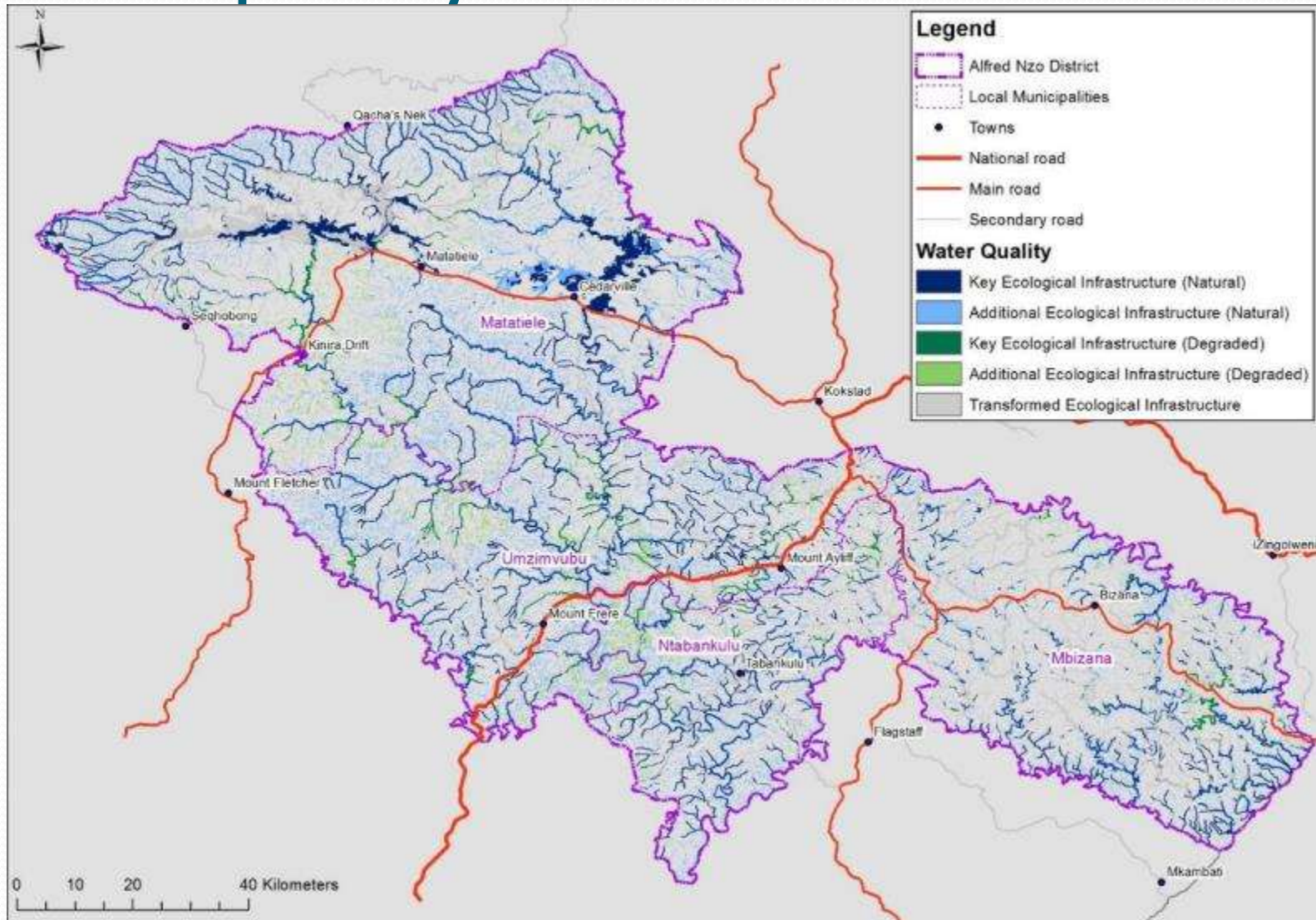
Erosion control

- Specific wetland types which reduce erosion risk
- Mapped areas of gully erosion
- Areas in proximity to gullies

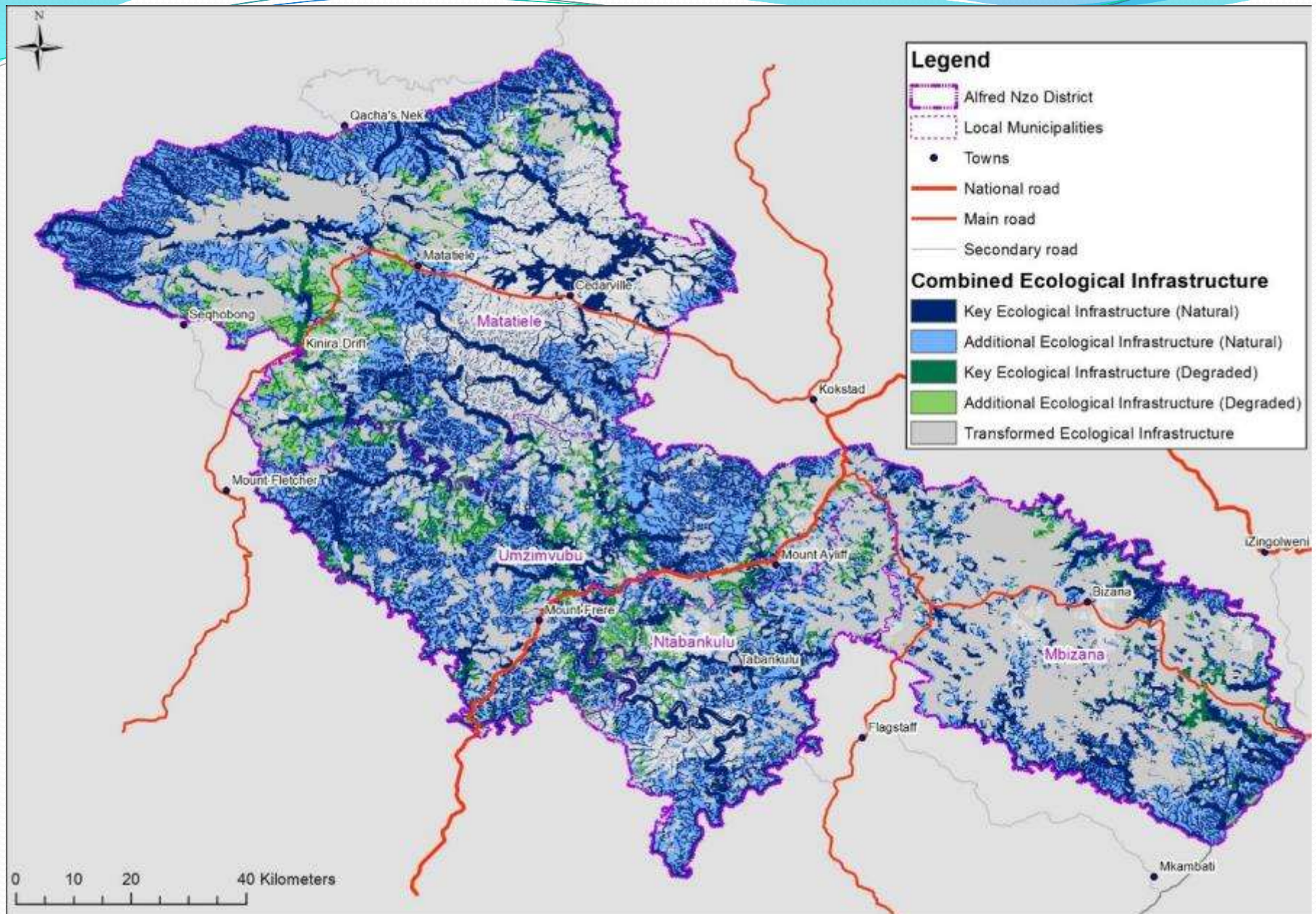


Erosion control			Intact Ecological Infrastructure	Degraded Ecological Infrastructure	Lost Ecological Infrastructure
Wetlands	Wetlands specifically mapped for erosion control	Channelled valley-bottom wetland with 100m buffer	2	2	1
		Floodplain wetland with 100m buffer	2	2	1
		Seep with 100m buffer	2	2	1
		Unchannelled valley-bottom wetland with 100m buffer	2	2	1
		Valleyhead seep with 100m buffer	2	2	1
		Other areas	2	2	1
Sediment Retention	Areas within 250m of gully erosion	Areas with dongas	2	2	1
		Riparian buffers (32m minimum; 100m larger rivers)	2	2	1

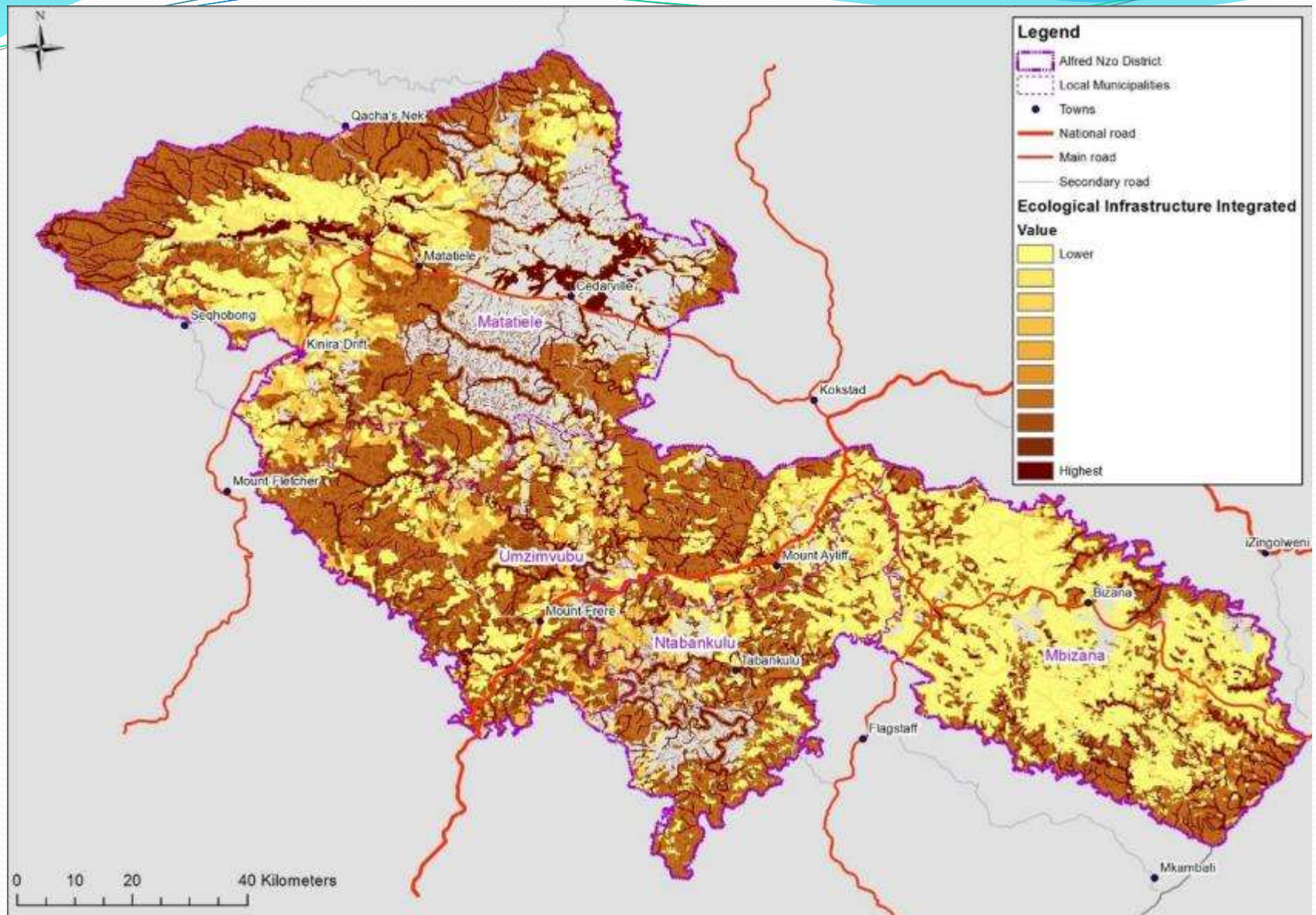
Similar process for enhancement of water quality



Put it all together



Prioritized



A Venn diagram consisting of four overlapping circles. The top circle is labeled 'Ecological Infrastructure' and is light green. The bottom circle is labeled 'Environmental Priorities' and is also light green. The left circle is labeled 'Social Priorities' and has a red-to-orange gradient. The right circle is labeled 'Climate resilience' and is light green. The circles overlap in various combinations, with the central area where all four overlap being a darker shade of green. The background is white with a blue wavy line at the top.

Ecological
Infrastructure

Social
Priorities

Climate
resilience

Environmental
Priorities

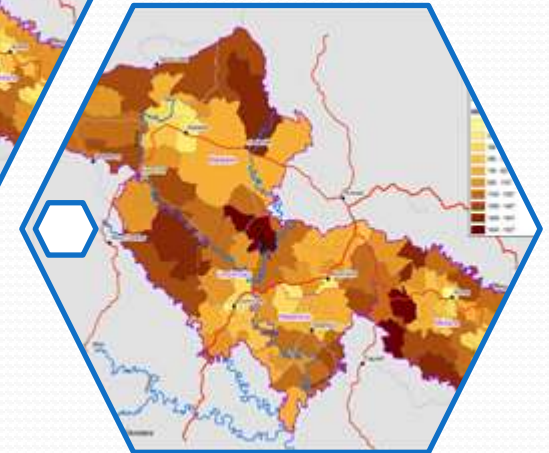
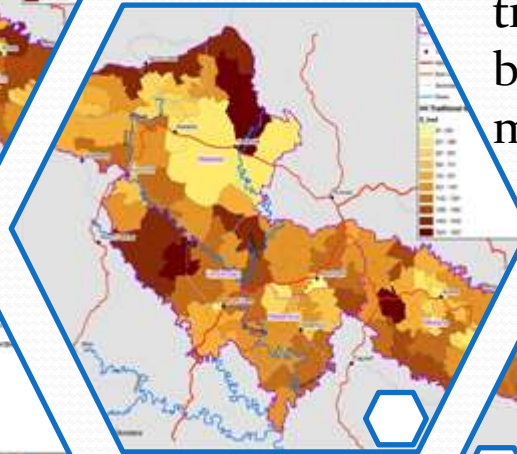
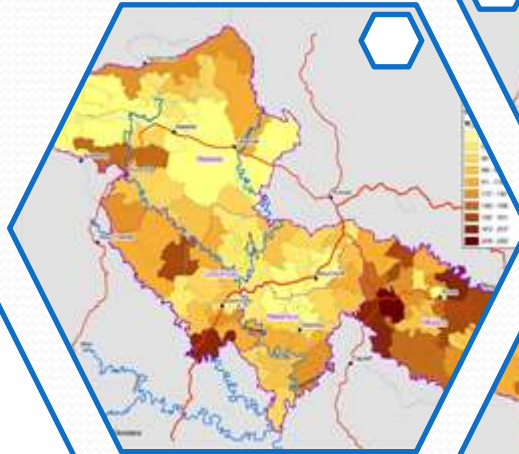
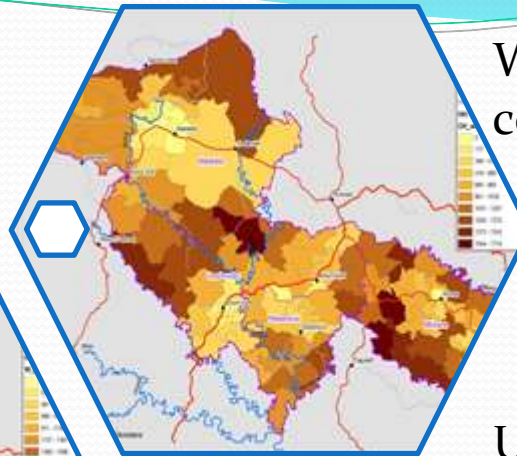
Direct raw use
of water from
the
environment

Wood for
cooking

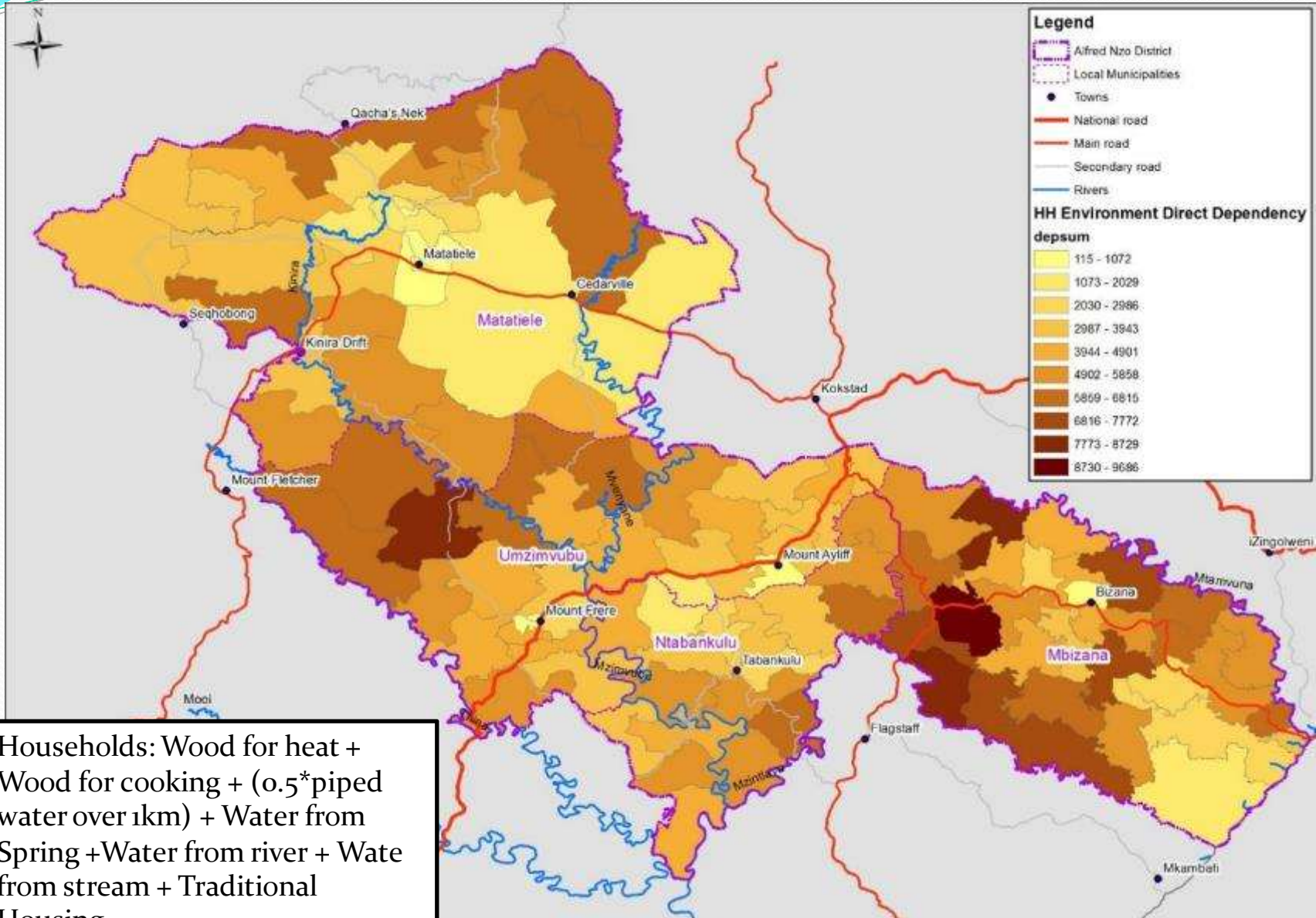
Use of
traditional
building
materials

Wood for
heating

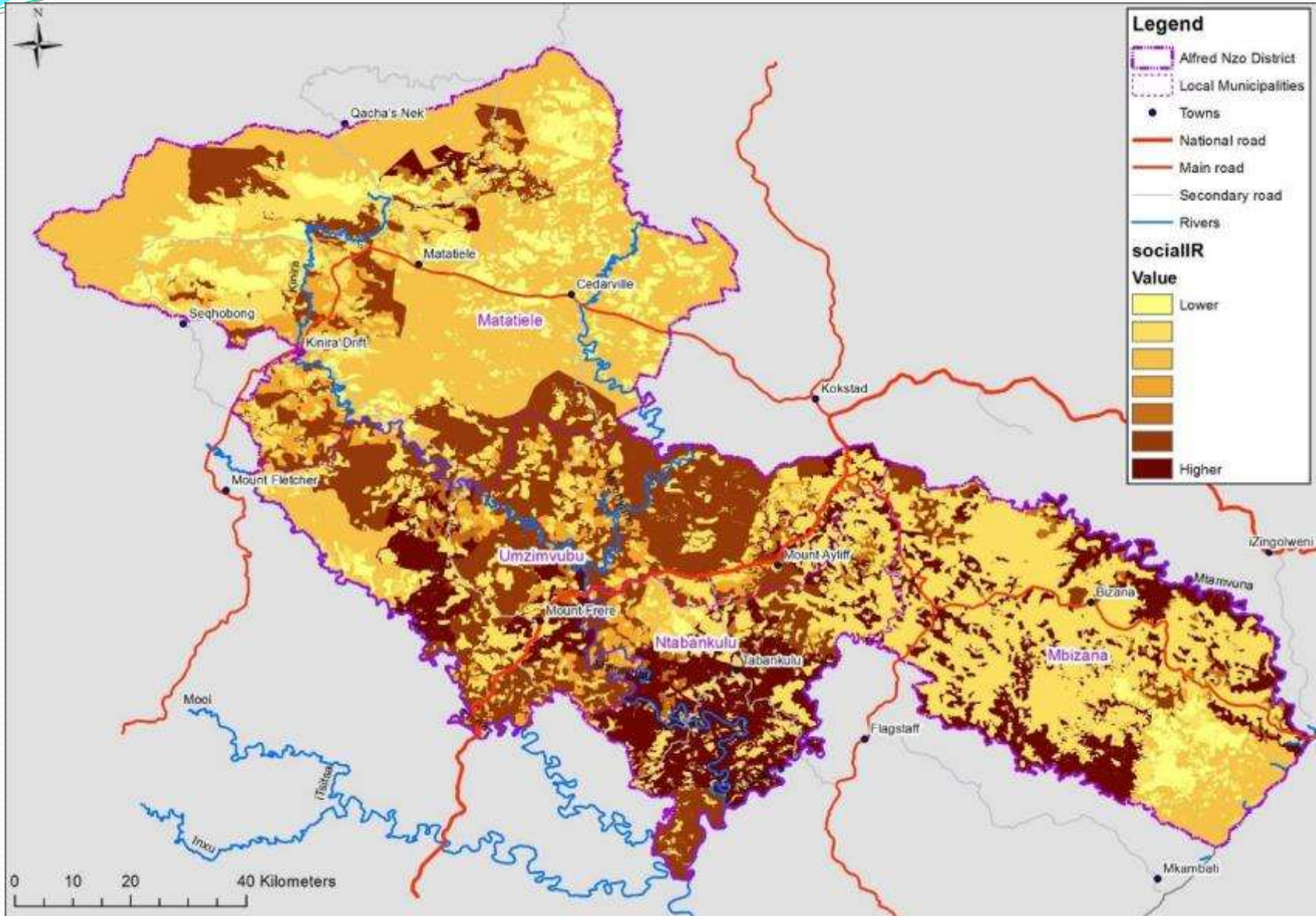
Try to understand
where people are
directly
dependent on
ecosystem
services



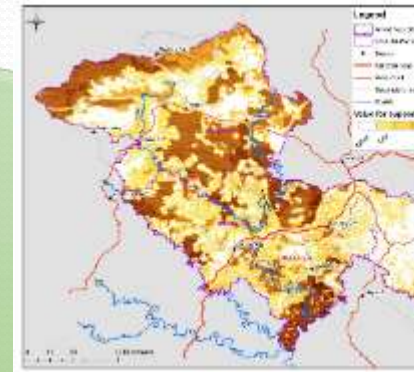
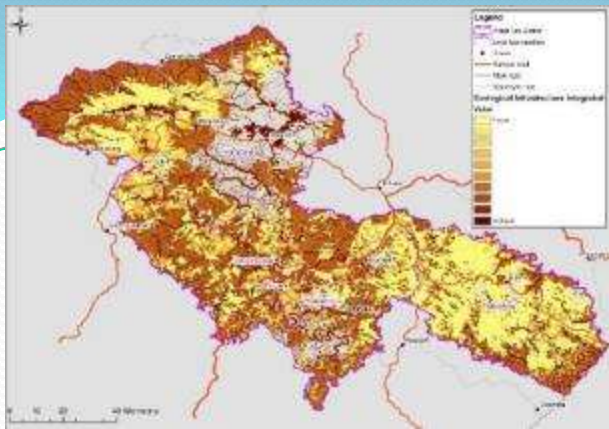
Total direct dependency



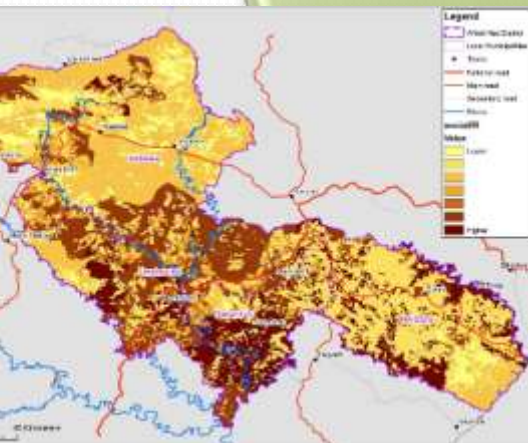
Where are natural areas important?



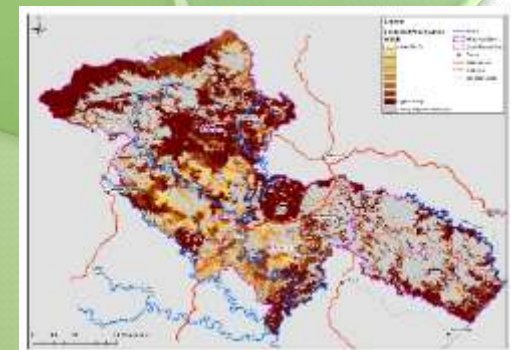
Ecological Infrastructure



Social Priorities

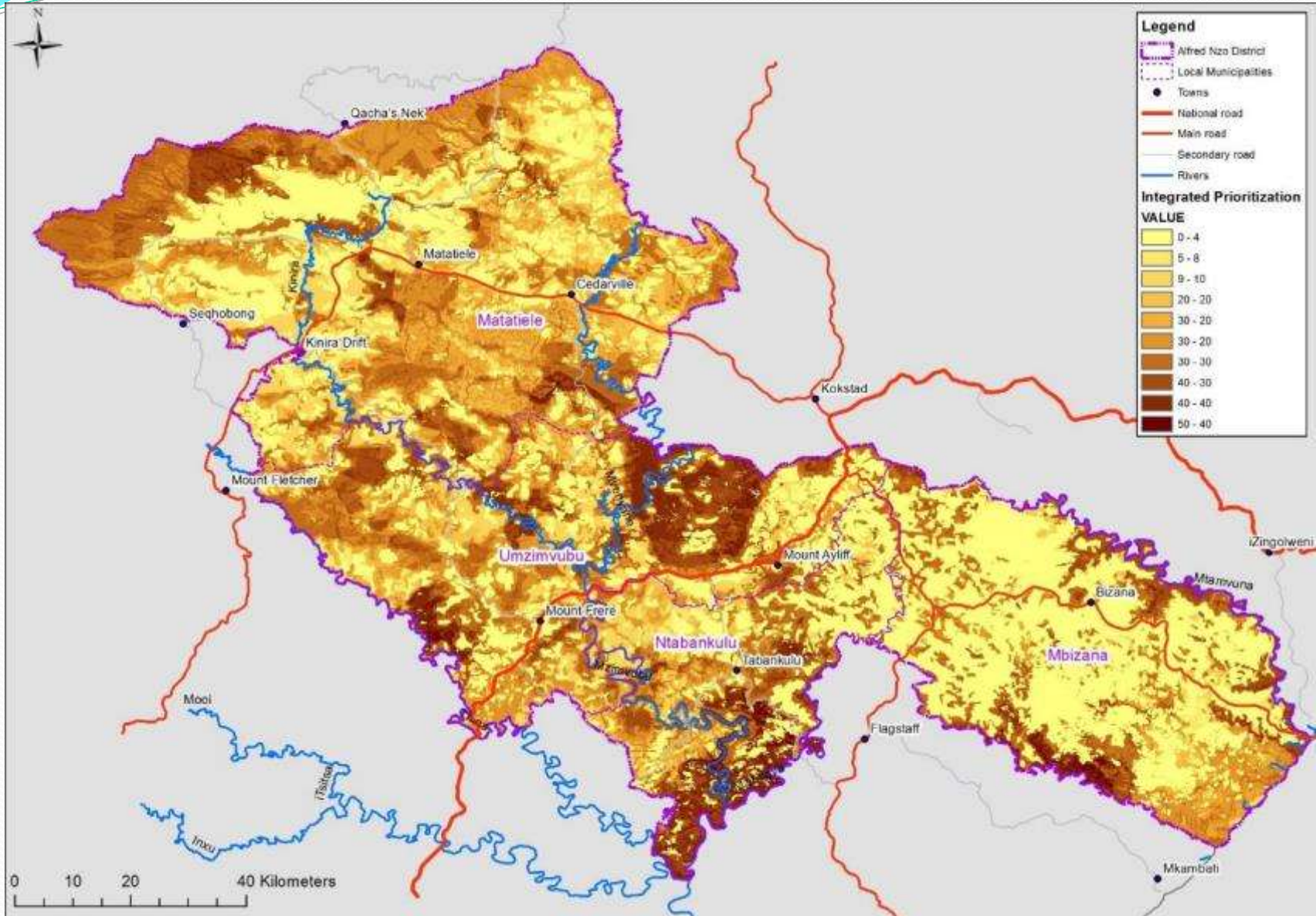


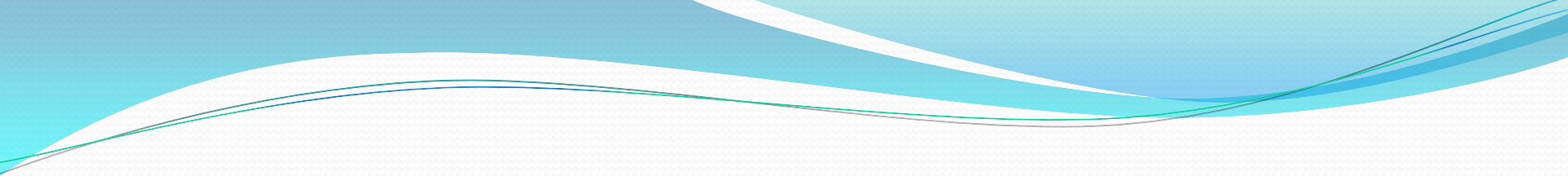
Climate resilience



Environmental Priorities

Bringing it all together!





Where we are now

- Project nearing completion
- We are still tweaking the social demand issues
- Outputs are being built into District IDPs, Spatial planning, etc

Ecosystem-based Adaptation

“the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people adapt to the adverse effects of climate change”

Ecological Infrastructure

“functioning ecosystems that deliver valuable services to people

e.g fresh water, climate regulation, soil formation and disaster risk reduction”

Key issues:

- How specific do we need to be when identifying EI? How big a basket are we looking for?
- To what extent must Ecological Infrastructure be demand linked? – I feel this is critical
 - Should we be trying to link Ecological Infrastructure and our CBAs more strongly? – Is there any link currently? Should EI be driving our spatial prioritization?
 - How strongly do we want to link EI and Ecosystem-based Adaptation?

