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A Climate Vulnerability Assessment Tool for communities and water infrastructure

Stockholm World Water Week
26 August 2018





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Problem Statement



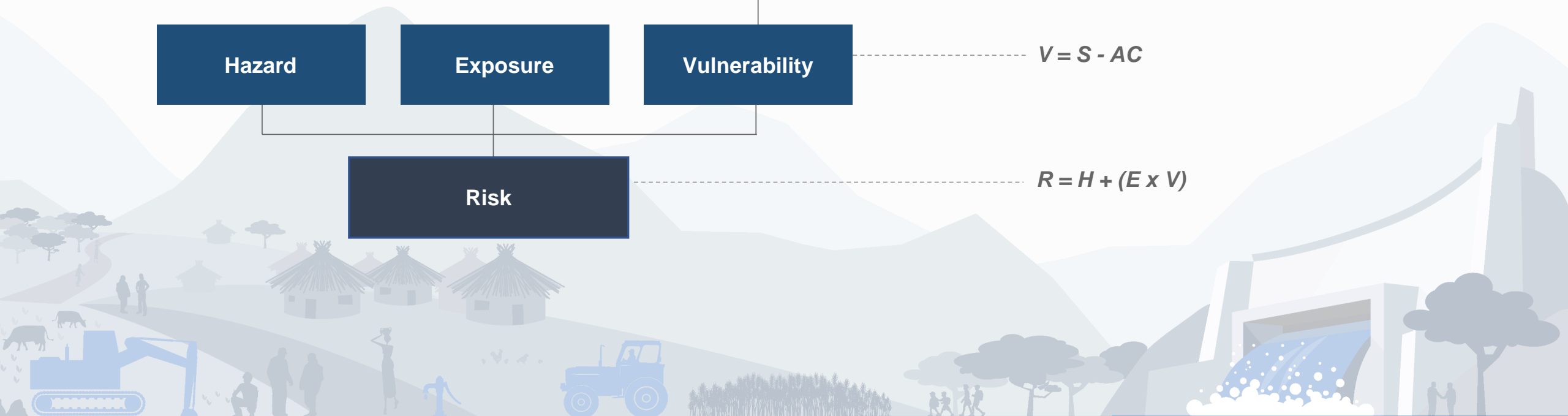
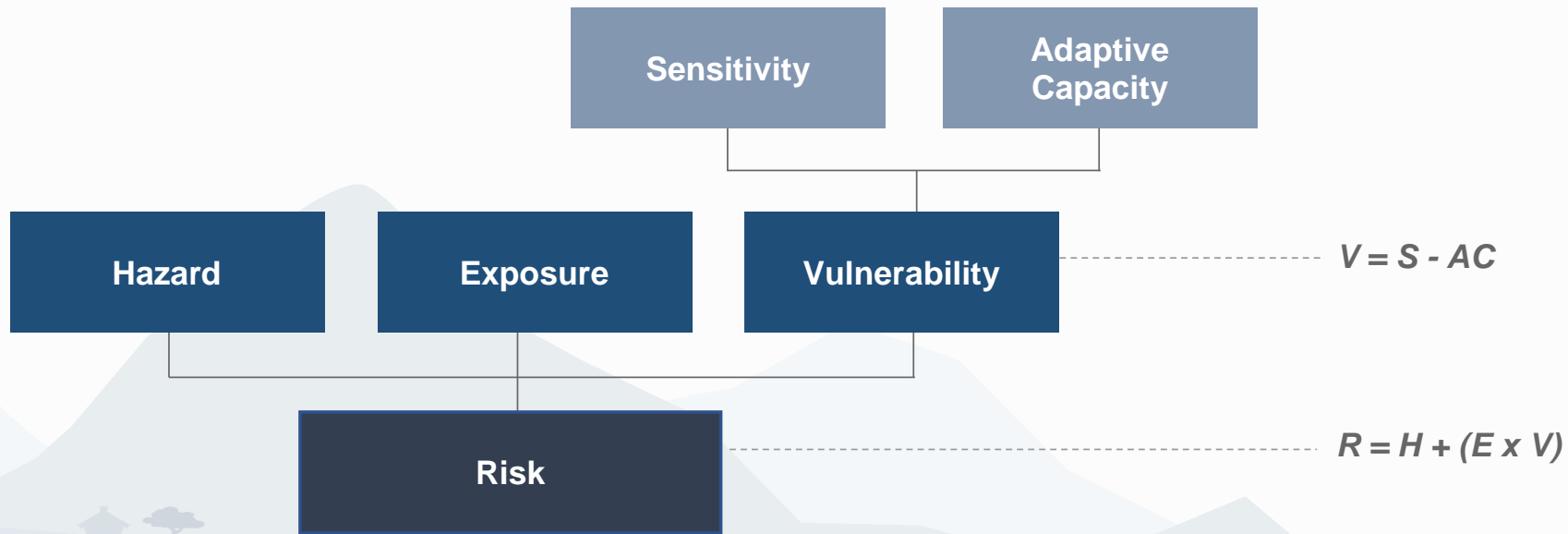
- Rural communities facing climate risks - highly vulnerable to climate impacts
- Communities have limited capacity to adapt to risks
- Tool assesses current risk and vulnerability
- Based on updated Intergovernmental Panel on Climate Change methodology





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How the tool works: Framework



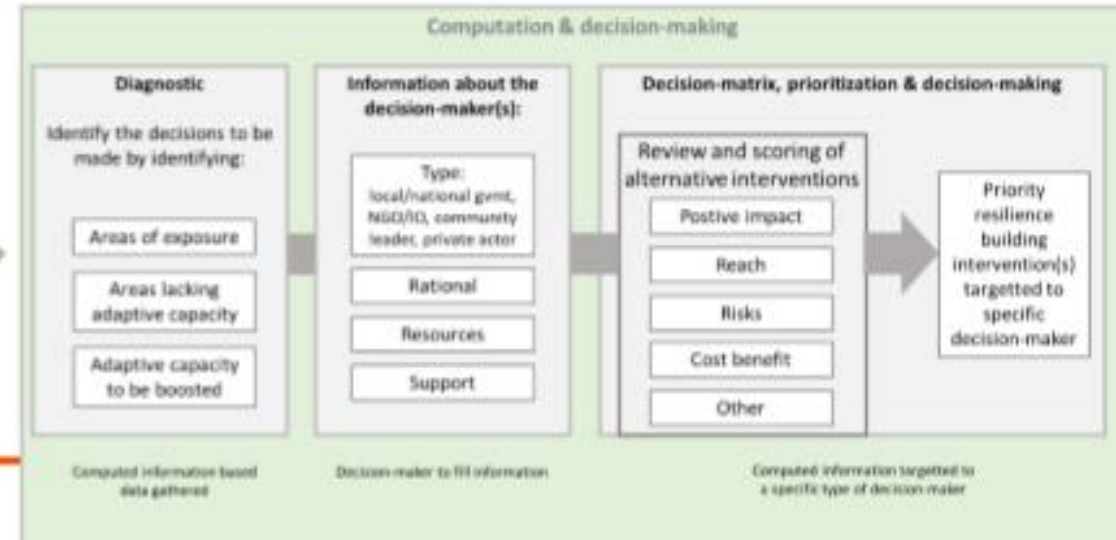
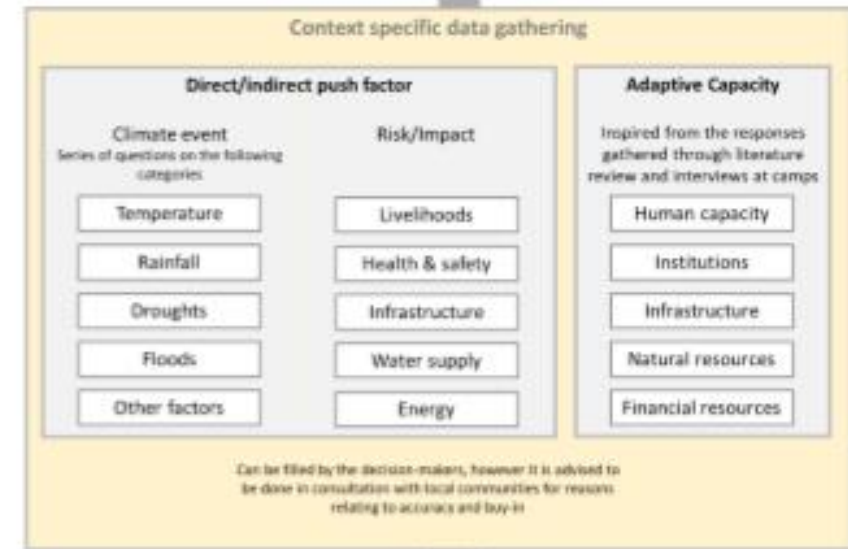
How the tool works: Structure

Survey

- Questionnaire to local stakeholders on climate and climate impact
- Questionnaire on adaptive capacity

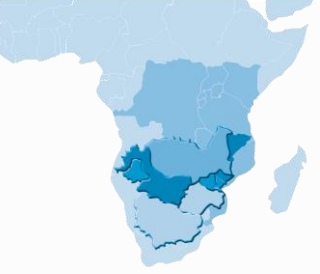
Assessment and diagnostics

- Climate risks
- Status of adaptive capacity
- Review interventions
- Propose prioritised interventions



CURRENT HAZARDS

Hazard		Question		Comments/Description	Answer?
1	Temperature	Seasons	Does your area experience seasonal temperature variability?	<i>During the year (across seasons), is temperature higher/lower than usual?</i>	Yes, higher than usual
		Annual Trends	Does your area experience inter-annual temperature variability?	<i>Over multiple years (i.e. trend), is temperature higher/lower than usual?</i>	Yes, higher than usual
		Hot days	During the hottest days, are you impacted by heat-related stress	<i>How often do you experience heat-related water stress?</i>	Sometimes
2	Rainfall	Seasons	Does your area experience seasonal rainfall variability?	<i>During the year (across seasons), is rainfall higher/lower than usual?</i>	Yes, higher than usual
		Annual Trends	Does your area experience inter-annual rainfall variability?	<i>Over multiple years (i.e. trend), is rainfall higher/lower than usual?</i>	Yes, higher than usual
		Heavy Rainfall	Are heavy rainfall events prevalent in your area?	<i>Do you often have high rainfall events?</i>	Yes
3	Droughts	Events	Are droughts prevalent in your area?	<i>Do you often experience droughts?</i>	Sometimes
		Timing	If droughts do occur, do they occur at the same time of the year?	<i>Is the timing of droughts consistent?</i>	Sometimes
		Extent	If droughts do occur, is the extent and intensity of the drought changing?	<i>Are droughts getting worse or better?</i>	Yes, but more
		Effect	When droughts do occur, do they impact any part/aspect of your area?	<i>Are you affected by droughts?</i>	Sometimes
4	Floods	Events	Are floods prevalent in your area?	<i>Do you often experience floods?</i>	Sometimes
		Timing	If floods do occur, do they occur at the same time of the year?	<i>Is the timing of floods consistent?</i>	Often
		Extent	If floods do occur, is the extent and intensity of the floods changing?	<i>Are floods getting worse (more impact/intensity) or better (less impact/intensity)?</i>	Yes, but less
		Effect	When floods do occur, do they impact any part/aspect of your area?	<i>Are you affected by floods?</i>	Sometimes
5	Other Factors	Fire	Do you frequently experience fires? And if yes, are you impacted?	<i>Are you impacted by fire in and around your area?</i>	Yes, but not impacted
		Snow	Do you frequently experience snowfall? And if yes, are you impacted?	<i>Are you impacted by snowfall in and around your area?</i>	No
		Hail	Do you frequently experience hail storms? And if yes, are you impacted?	<i>Are you impacted by hail in and around your area?</i>	Yes, but not impacted
		Tornado	Do you frequently experience tornadoes? And if yes, are you impacted?	<i>Are you impacted by tornadoes in and around your area?</i>	No
		Earthquake	Do you frequently experience earthquakes? And if yes, are you impacted?	<i>Are you impacted by earthquakes in and around your area?</i>	Yes, but not impacted
		Volcano	Do you frequently experience volcanoes? And if yes, are you impacted?	<i>Are you impacted by volcanoes in and around your area?</i>	No



HAZARD

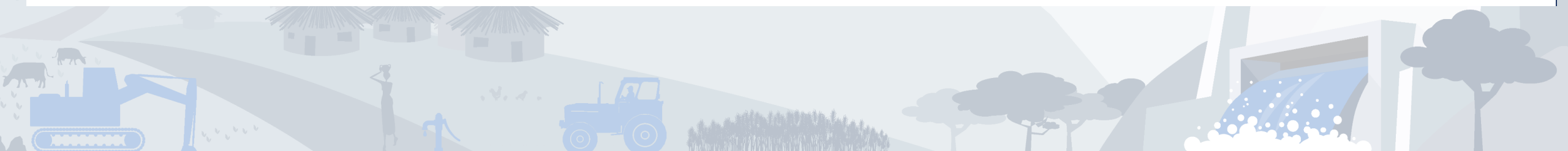
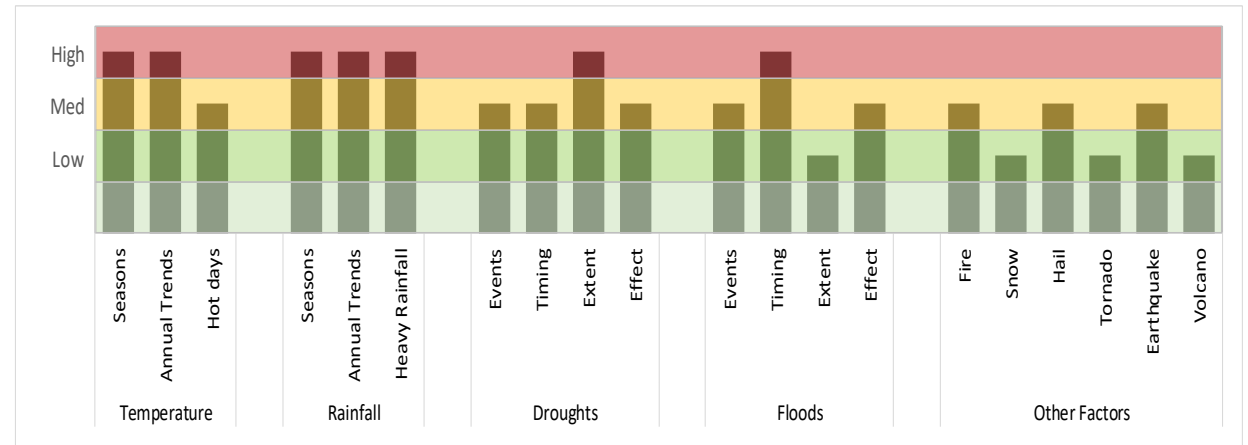
CURRENT

The table below illustrates the current climate hazards

Temperature	Seasons		Annual Trends		Hot days	
Rainfall	Seasons		Annual Trends		Heavy Rainfall	
Droughts	Events	Timing		Extent		Effect
Floods	Events	Timing		Extent		Effect
Other Factors	Fire	Snow	Hail	Tornado	Earthquake	Volcano

Legend: ■ Low ■ Medium ■ High

The graph below illustrates the current climate hazards





EXPOSURE

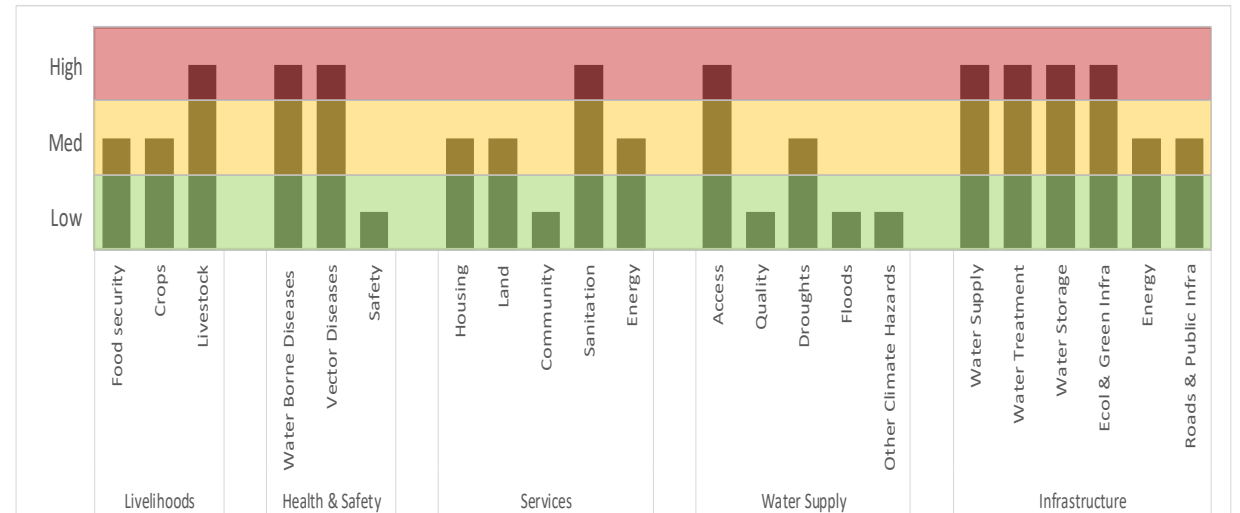
CURRENT

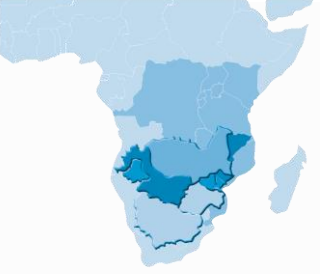
The table below illustrates the current levels of exposure

Livelihoods	Food security		Crops		Livestock	
Health & Safety	Water Borne Diseases		Vector Diseases		Safety	
Services	Housing	Land	Community	Sanitation	Energy	
Water Supply	Access	Quality	Droughts	Floods	Other Climate Hazards	
Infrastructure	Water Supply	Water Treatment	Water Storage	Ecol & Green Infra	Energy	Roads & Public Infra

Legend:  Low  Medium  High

The graph below illustrates the current levels of exposure





SENSITIVITY

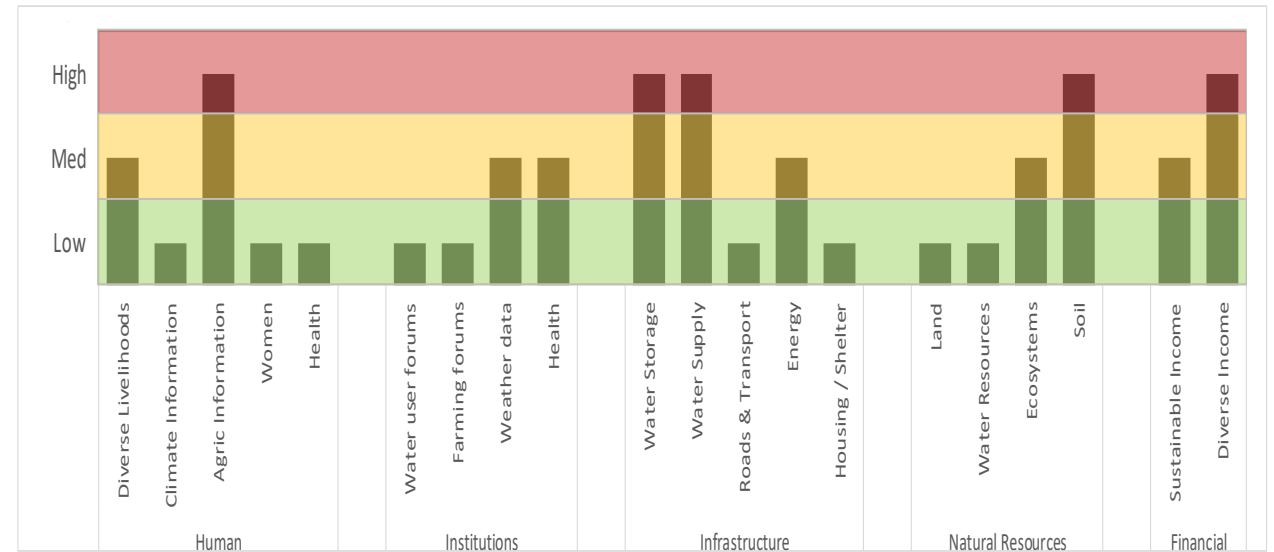
CURRENT

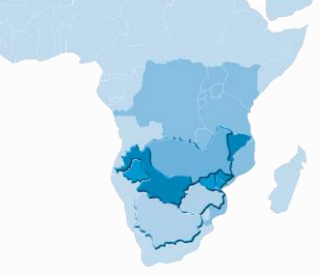
The table below illustrates the current levels of sensitivity

Human	Diverse Livelihoods	Climate Information	Agric Information	Women	Health
Institutions	Water user forums	Farming forums	Weather data	Health	
Infrastructure	Water Storage	Water Supply	Roads & Transport	Energy	Housing / Shelter
Natural Resources	Land	Water Resources	Ecosystems	Soil	
Financial Resources	Sustainable Income		Diverse Income		

Legend: ■ Low ■ Medium ■ High

The graph below illustrates the current levels of sensitivity





ADAPTIVE CAPACITY

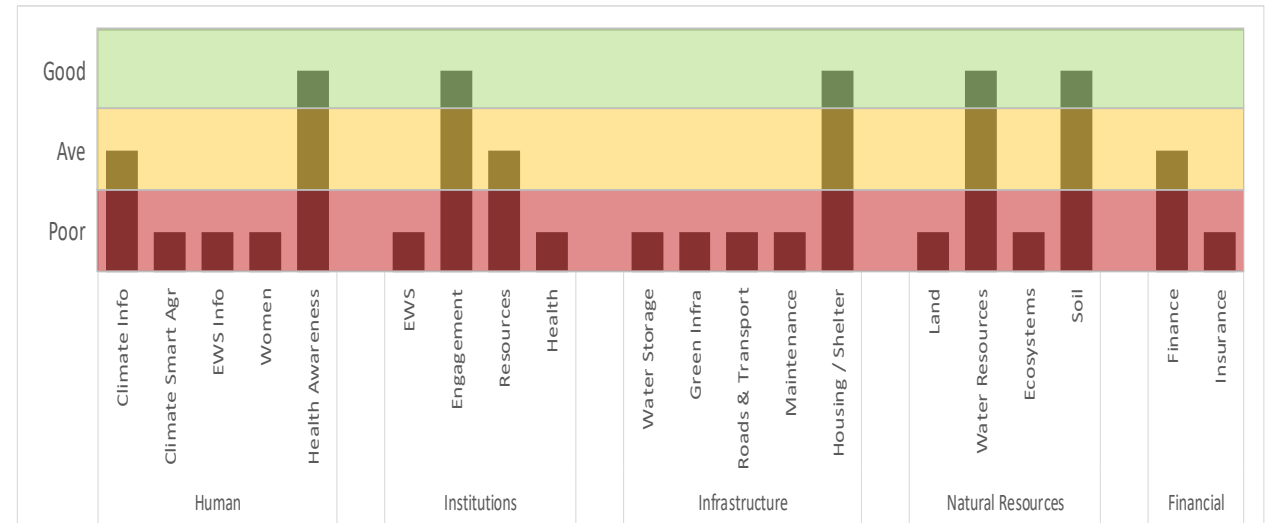
CURRENT

The table below illustrates the current adaptive capacity

Human	Climate Info	Climate Smart Agr	EWS Info	Women	Health Awareness
Institutions	EWS	Engagement	Resources	Health	
Infrastructure	Water Storage	Green Infra	Roads & Transport	Maintenance	Housing / Shelter
Natural Resources	Land	Water Resources	Ecosystems	Soil	
Financial Resources	Finance		Insurance		

Legend: ■ Good ■ Ave ■ Poor

The graph below illustrates the current adaptive capacity





VULNERABILITY

CURRENT

The table below illustrates the current vulnerability - viewed by the same categories as 'sensitivity' and 'adaptive capacity'

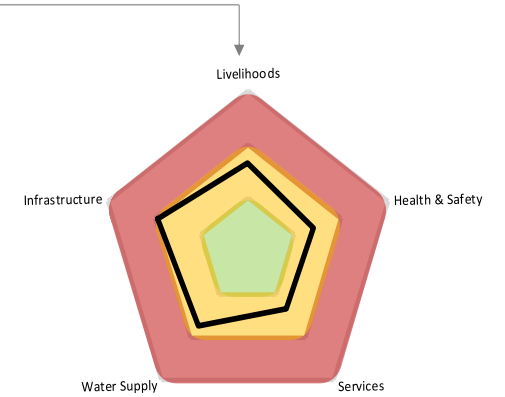
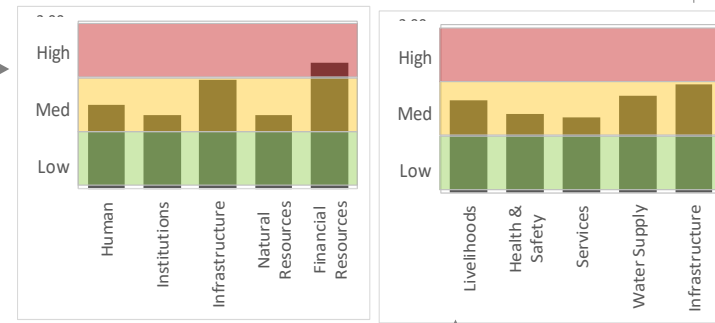


The table below illustrates the current vulnerability - viewed by the same categories as 'exposure'

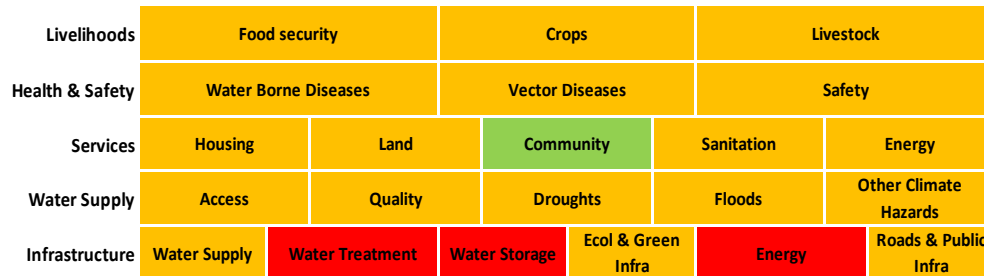


Legend: ■ Low ■ Medium ■ High

The graph below illustrates the current levels of vulnerability

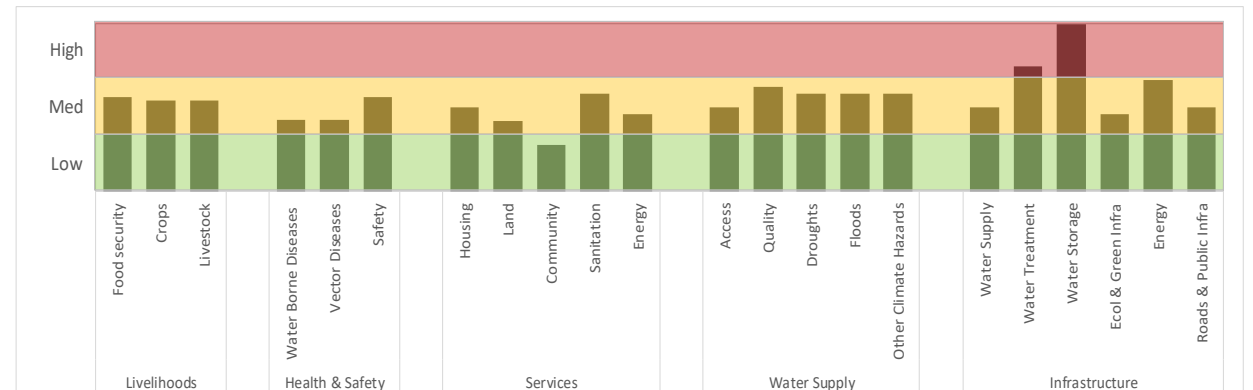


The table below illustrates the current levels of vulnerability in more detail



Legend: ■ Low ■ Medium ■ High

The graph below illustrates the current levels of vulnerability





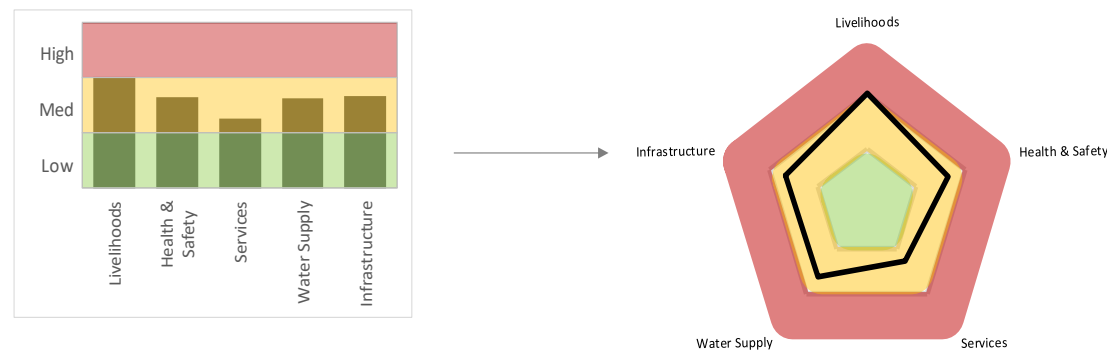
RISK

CURRENT

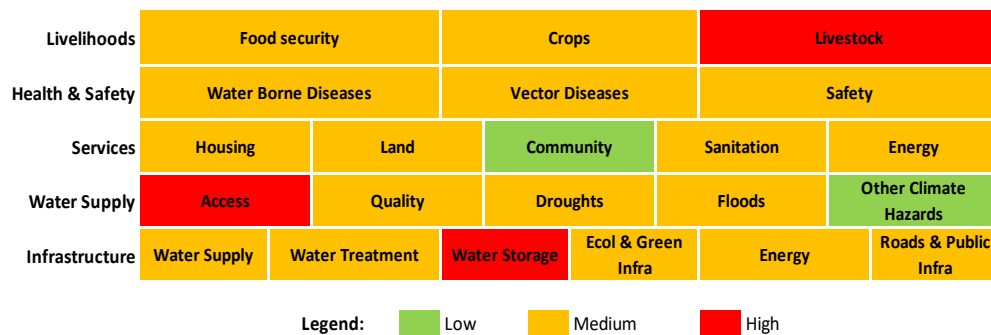
The table below illustrates the current levels of risk, by category



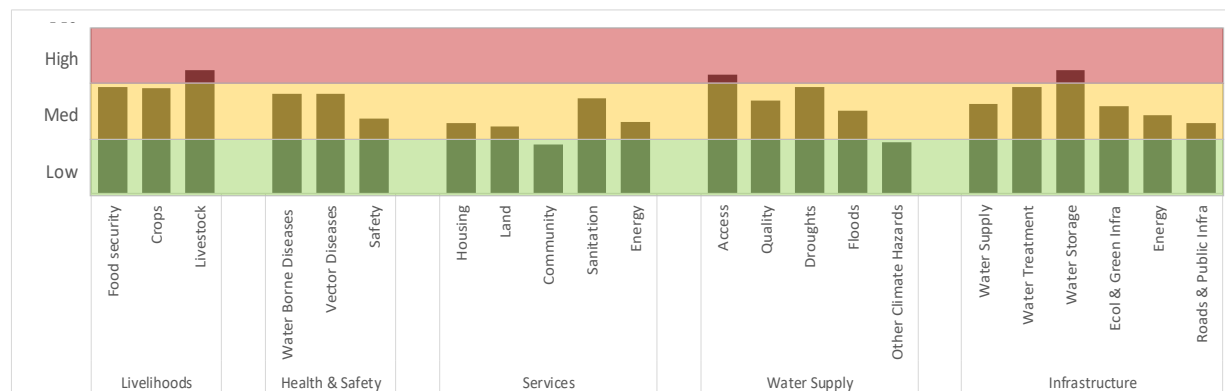
The figure below illustrates the current levels of risk, by category



The table below illustrates the current levels of risk

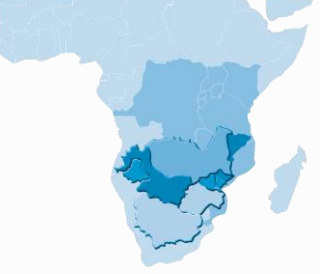


The figure below illustrates the current levels of risk



World Café table discussion topics

- Are the definitions of vulnerability and risk clear and understandable? How do we communicate these to communities and key decision makers?
- Can a non-climate expert use the tool?
- Are there other factor that need to be taken into account in the analysis? Are there factors that can be dropped?
- Can the presentation of the results be improved?
- How should the analysis be extended to identify opportunities to address the risks?



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Thank you!!

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