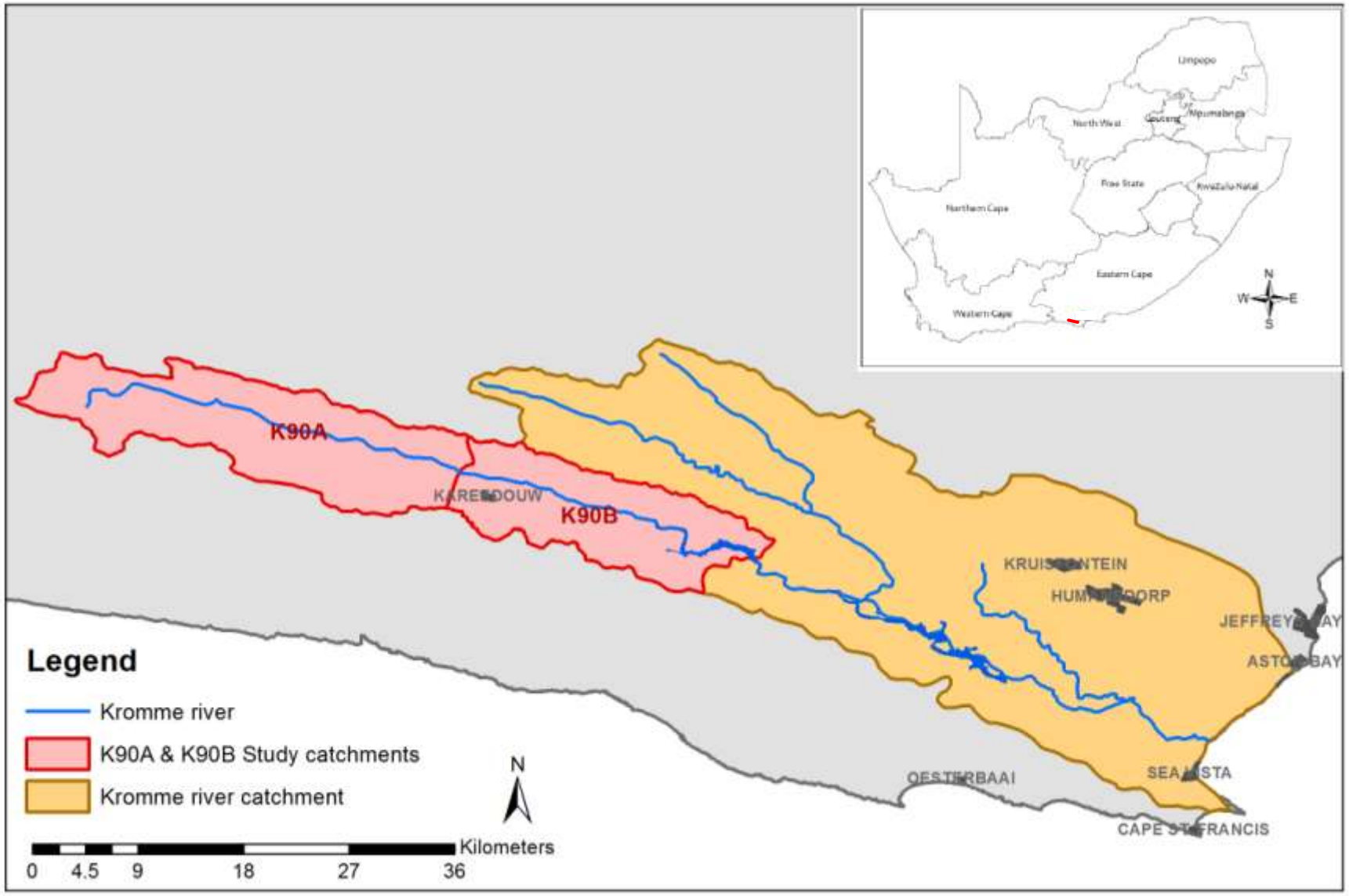
Water scarcity; perceptions and facts!?

A case study around farmers in the Upper Kromme River Catchment; South Africa

29 August 2012

The study area



Main research question:

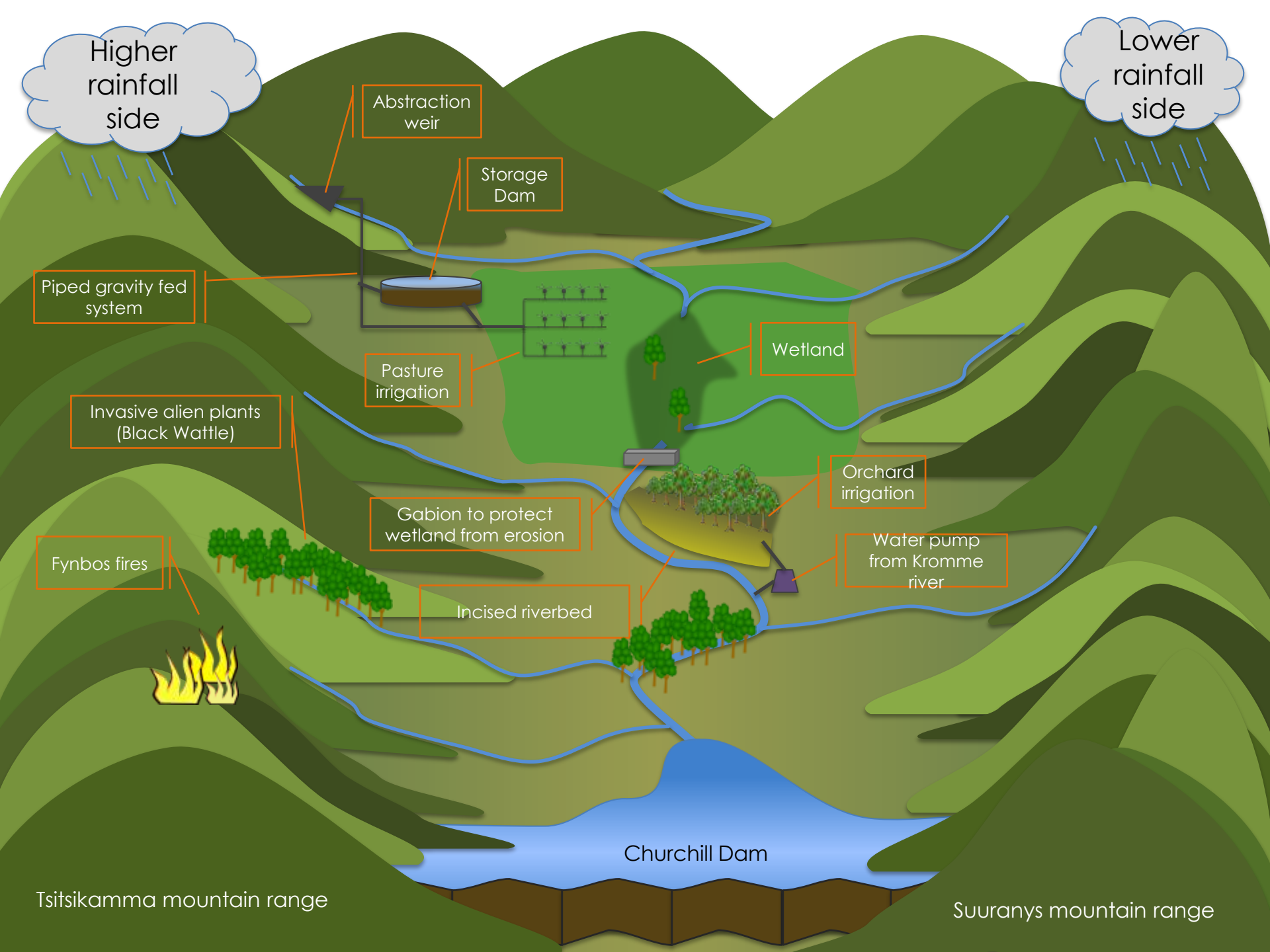
"How and to what extent do political, management and physical factors influence on water scarcity problems for the farmers in the Upper Kromme River catchment? And how can collective action of the farmers help to anticipate on and cope with the different water scarcity dimensions?"

What did I do in the field?

Measuring the perception of farmers on;

1. *past up till current and future water scarcity problems in the Kromme River catchment; and*

2. *single vs. collective action impact on water scarcity problems*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Abstraction weir
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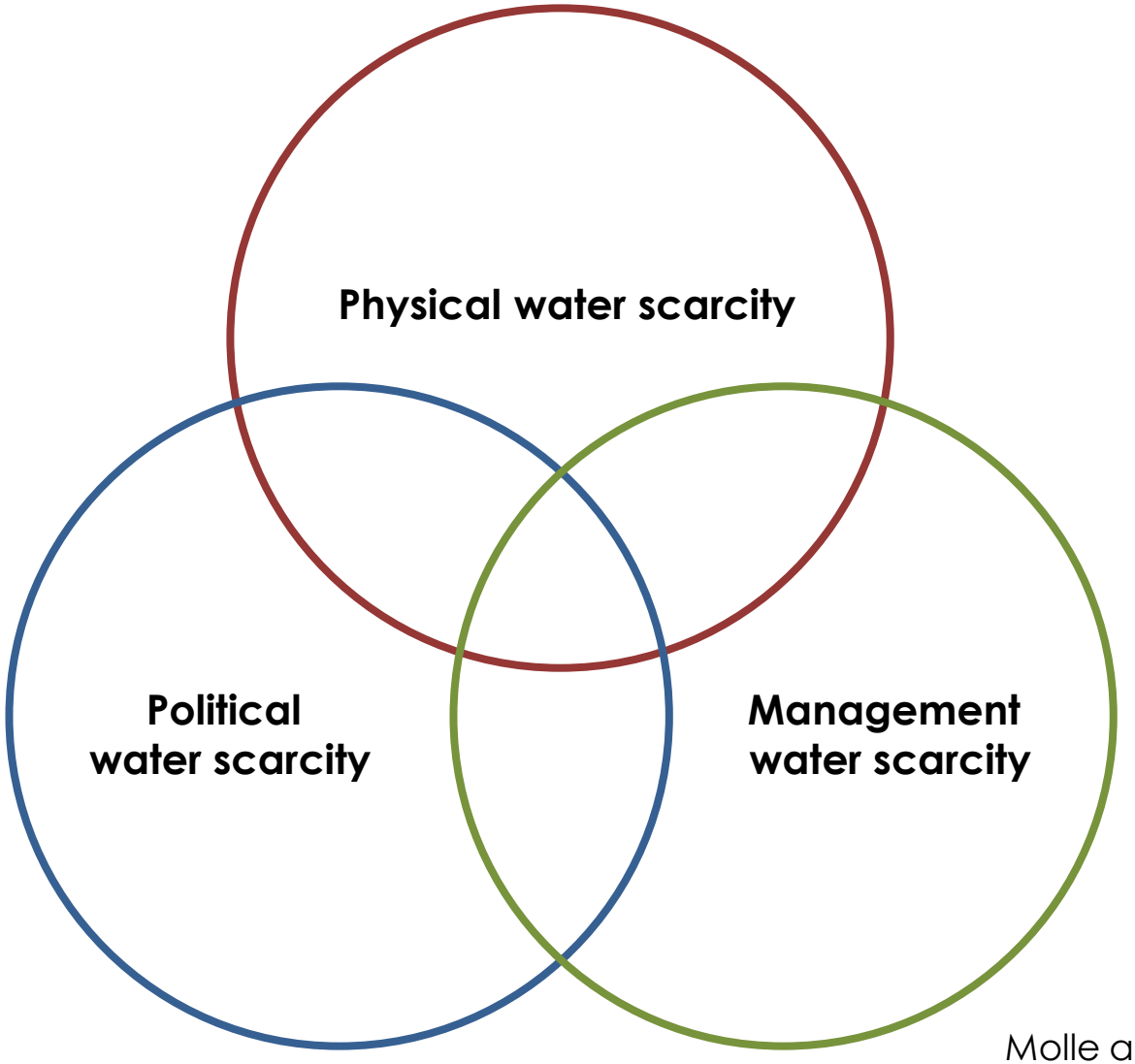
Tsitsikamma mountain range
Suuranys mountain range

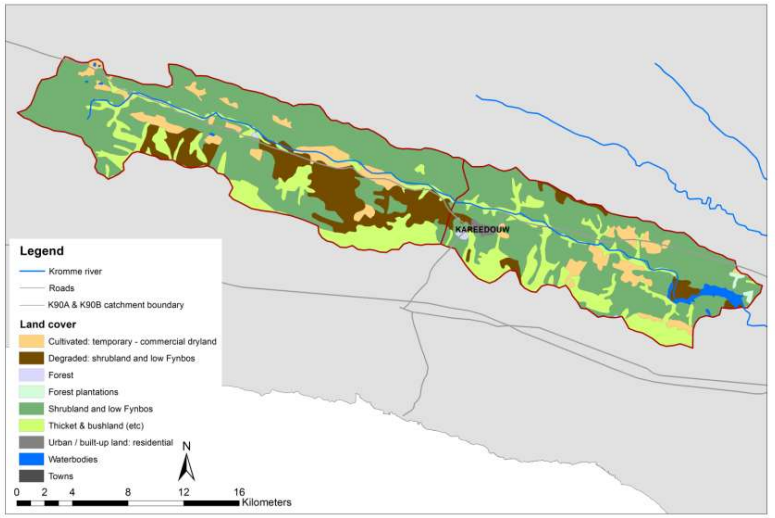
Three types of water scarcity



Molle and Mollinga (2003)

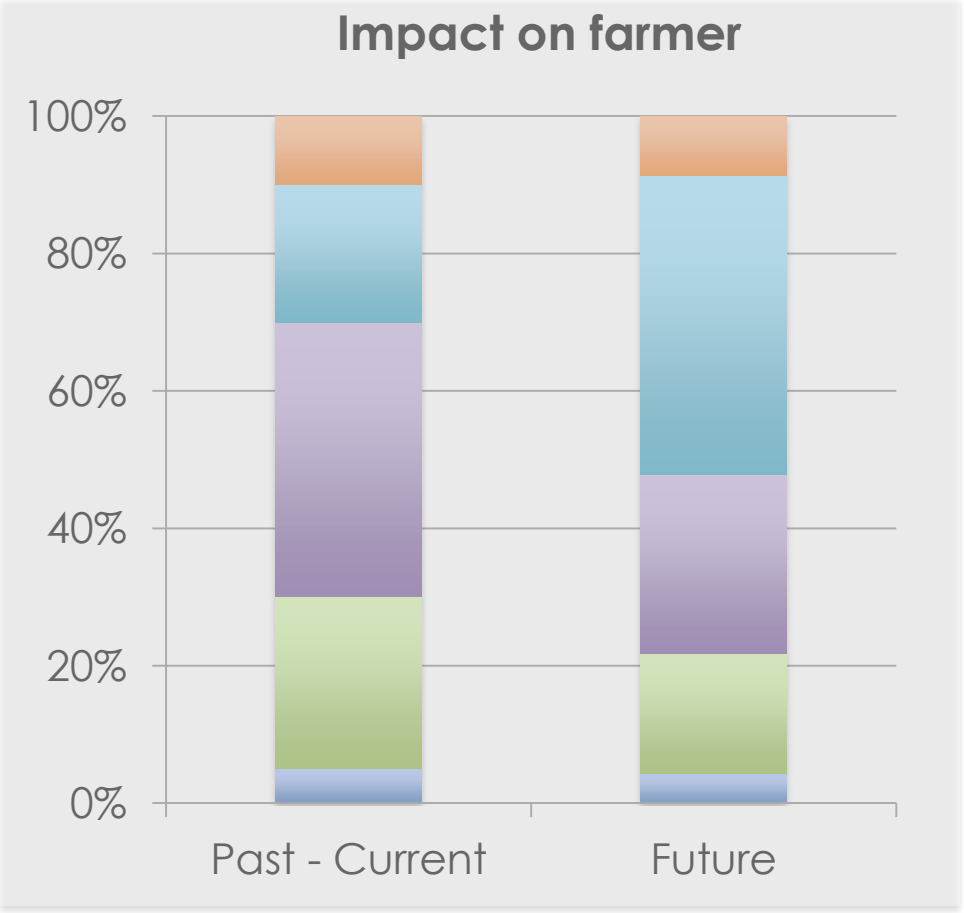
Physical water scarcity

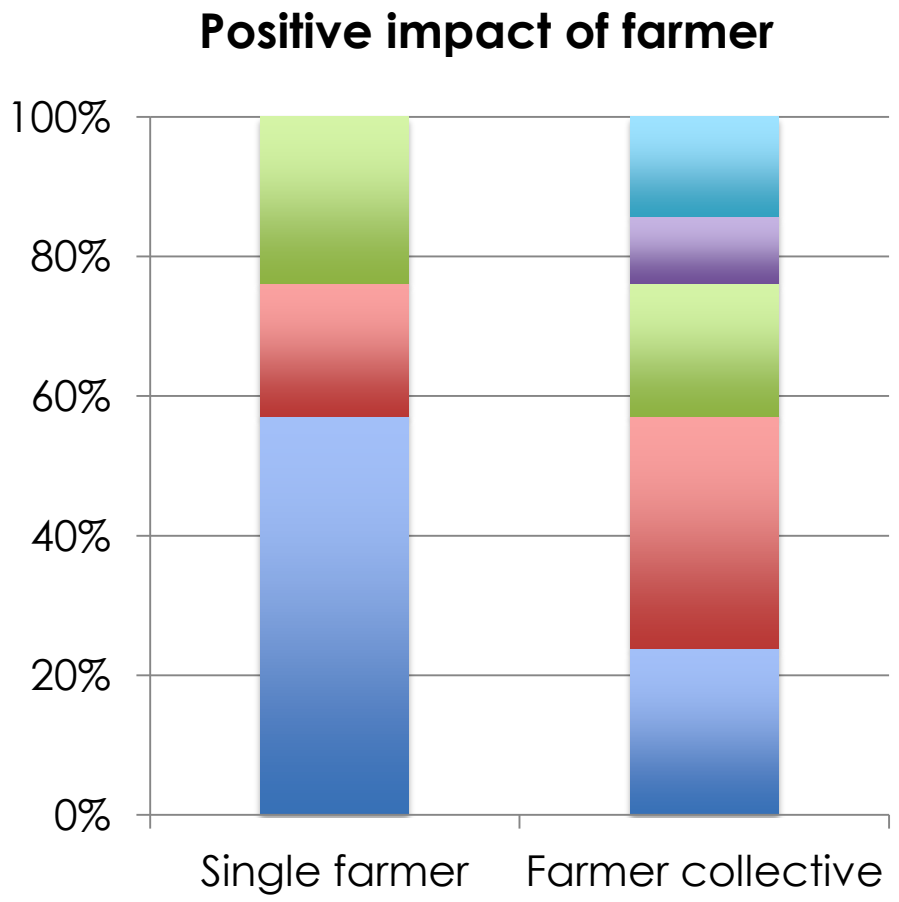
- *Physical water scarcity is absolute scarcity, the water source availability is limited by nature (climate / land cover);*



Physical water scarcity

Interview responses





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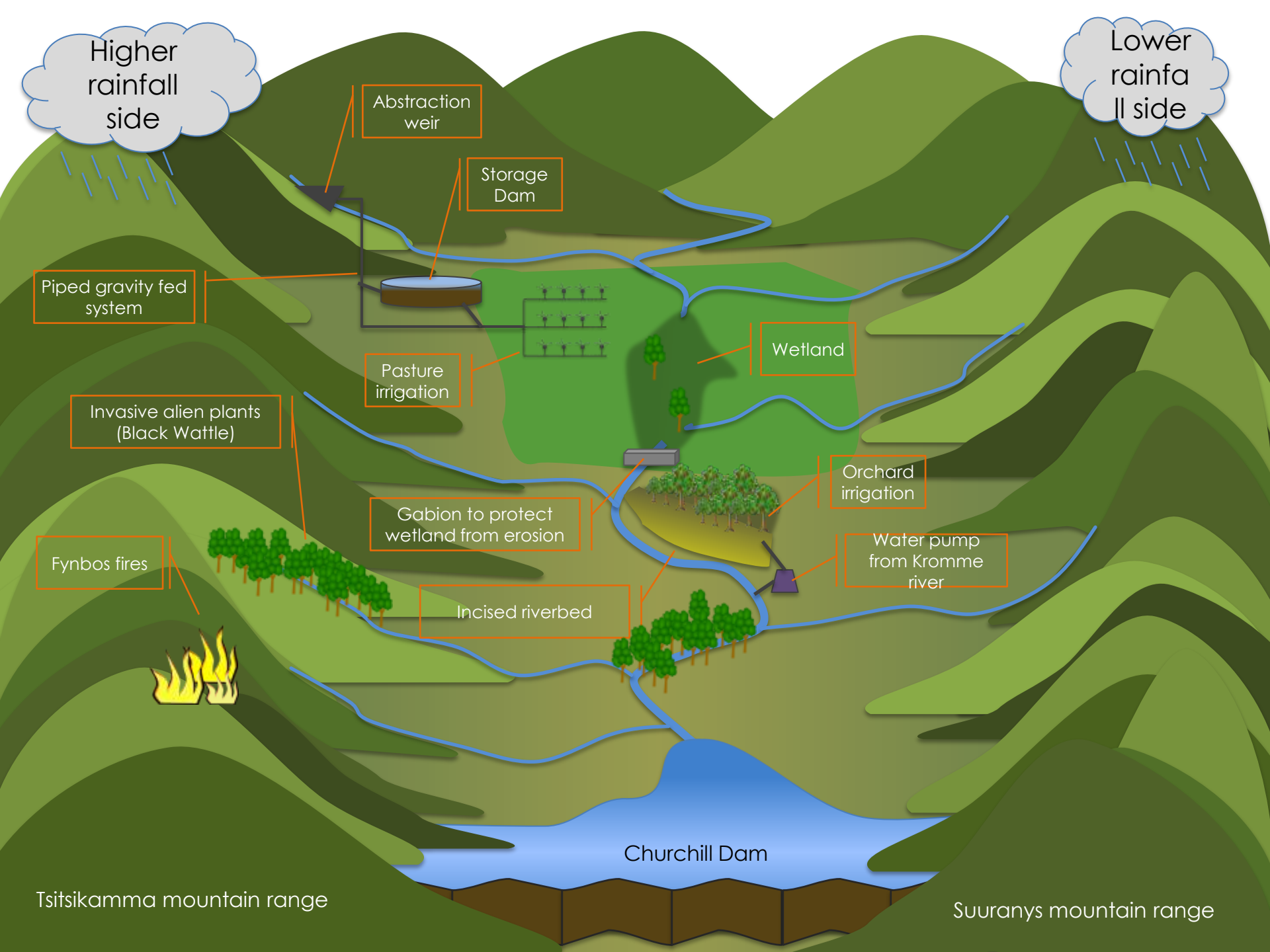
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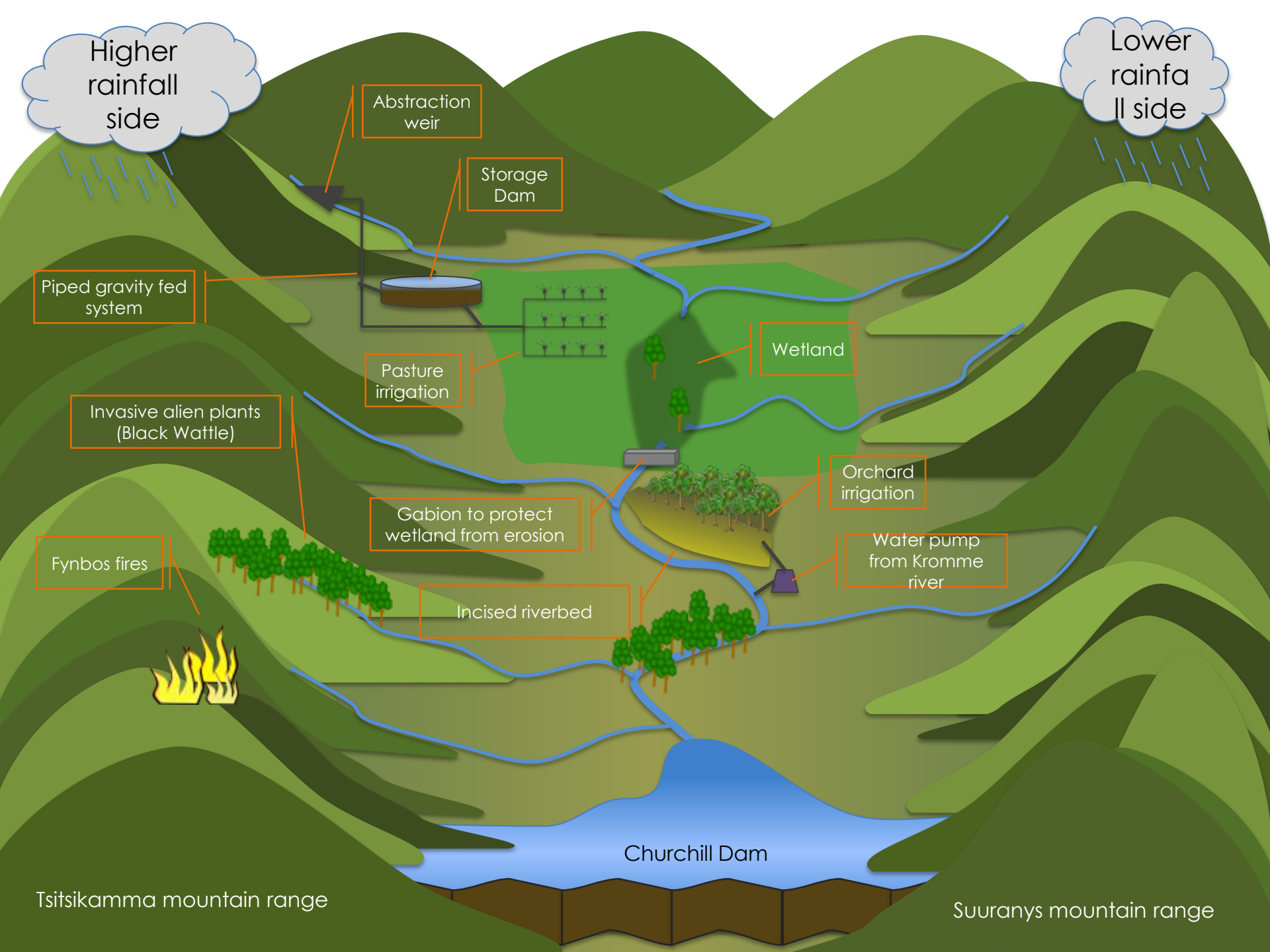
Climate change

Parameter	Ratio	Direction of change
Ratios of intermediate future (± 2046 – 2065) compared to present (±1960-1990)		
Mean annual precipitation	0,8 - 0,95	Decrease
Variation of annual precipitation	1,2 - 1,4	Increase
Total number of days with no rainfall	No change	-
Total number of days with rainfall > 5mm	0,8 - 0,95	Decrease
Total number of days with rainfall > 10mm	0,8 - 0,95	Decrease
Total number of days with rainfall > 20mm	0,6 - 0,8	Decrease
Ratios of distant future (± 2081 – 2100) compared to present (±1960-1990)		
Mean Annual precipitation	0,6 - 1,05	Most likely decrease

Future to present ratios of different hydrologic parameters in the Upper Kromme River Catchment under the conditions of climate change (derived from maps in Lumsden et al. 2009)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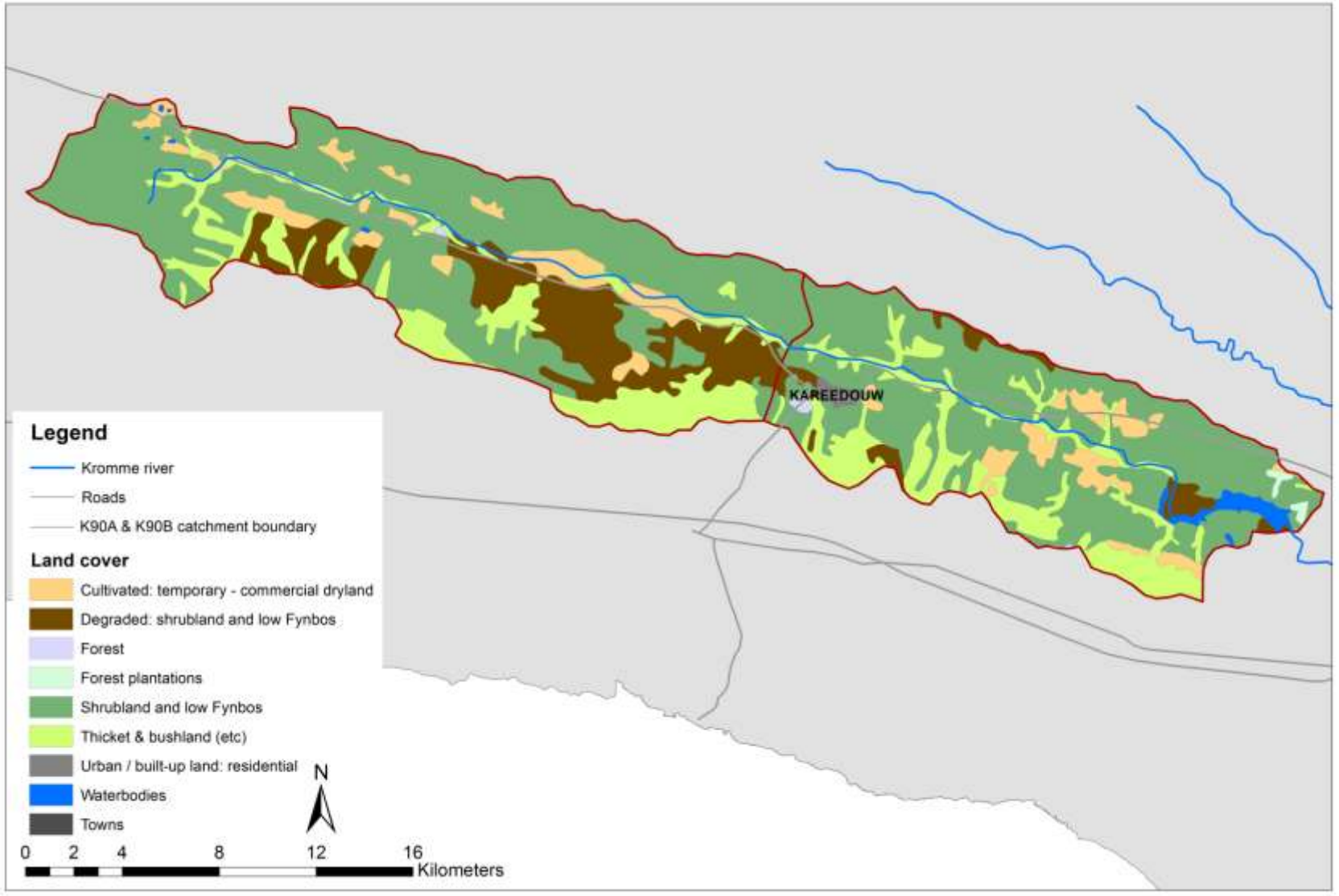
Land cover

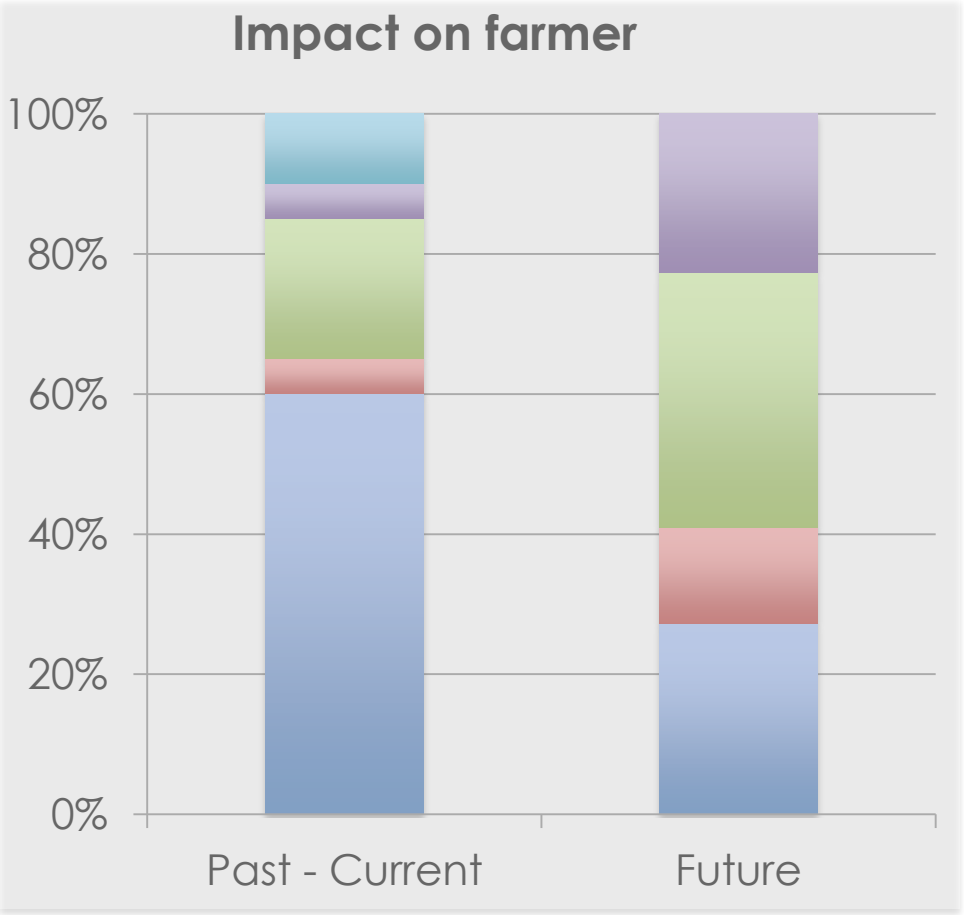

KAREEDOUW
Legend
Kromme river
Roads
K90A & K90B catchment boundary
Land cover
Cultivated: temporary - commercial dryland
Degraded: shrubland and low Fynbos
Forest
Forest plantations
Shrubland and low Fynbos
Thicket & bushland (etc)
Urban / built-up land: residential
Waterbodies
Towns
N
0 2 4 8 12 16
Kilometers

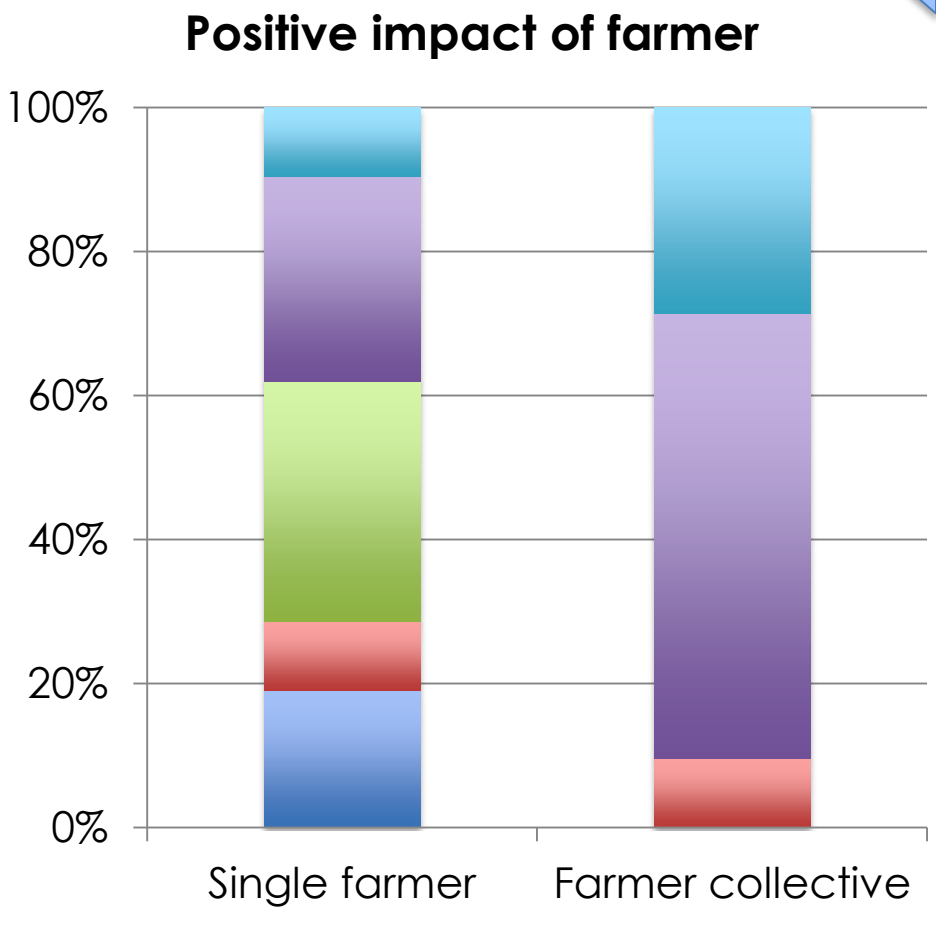
Management water scarcity

- *Management water scarcity is scarcity because of the land & water management practices of the farmer and other farmers in the catchment, and because of (a lack of) management in the catchment from institutional level (DWA, CMA)*

Management water scarcity; *Single farm*

Interview responses





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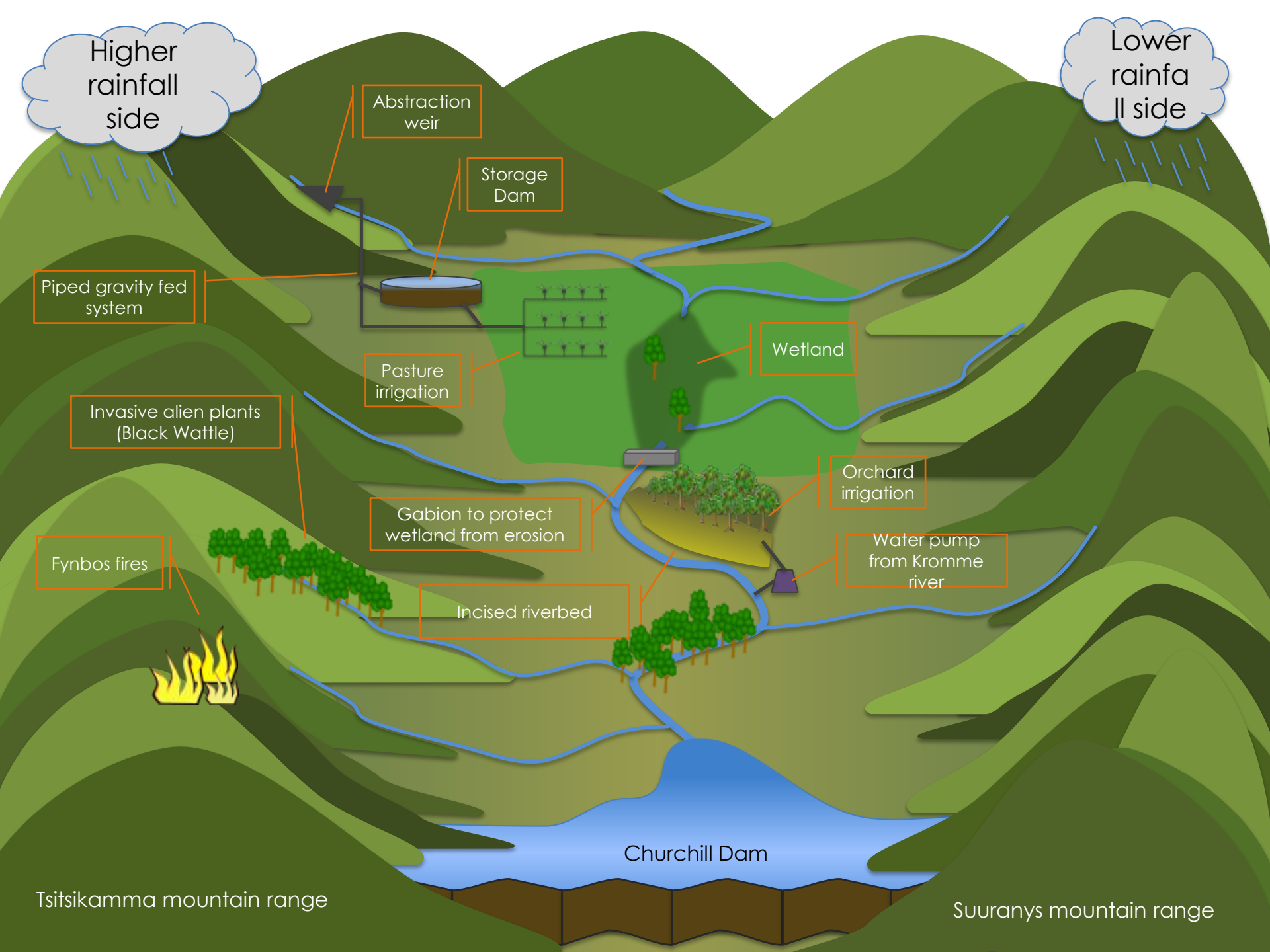
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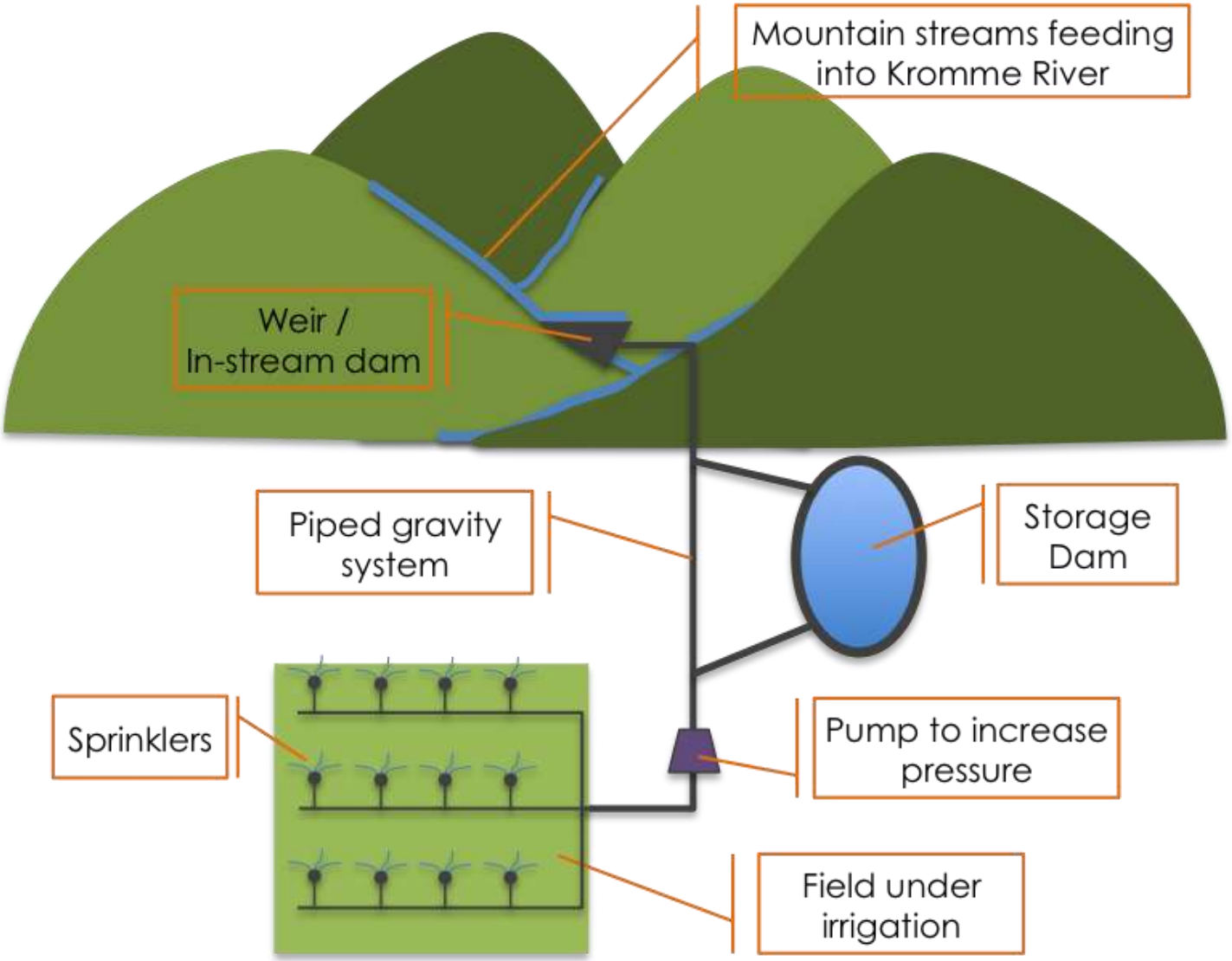
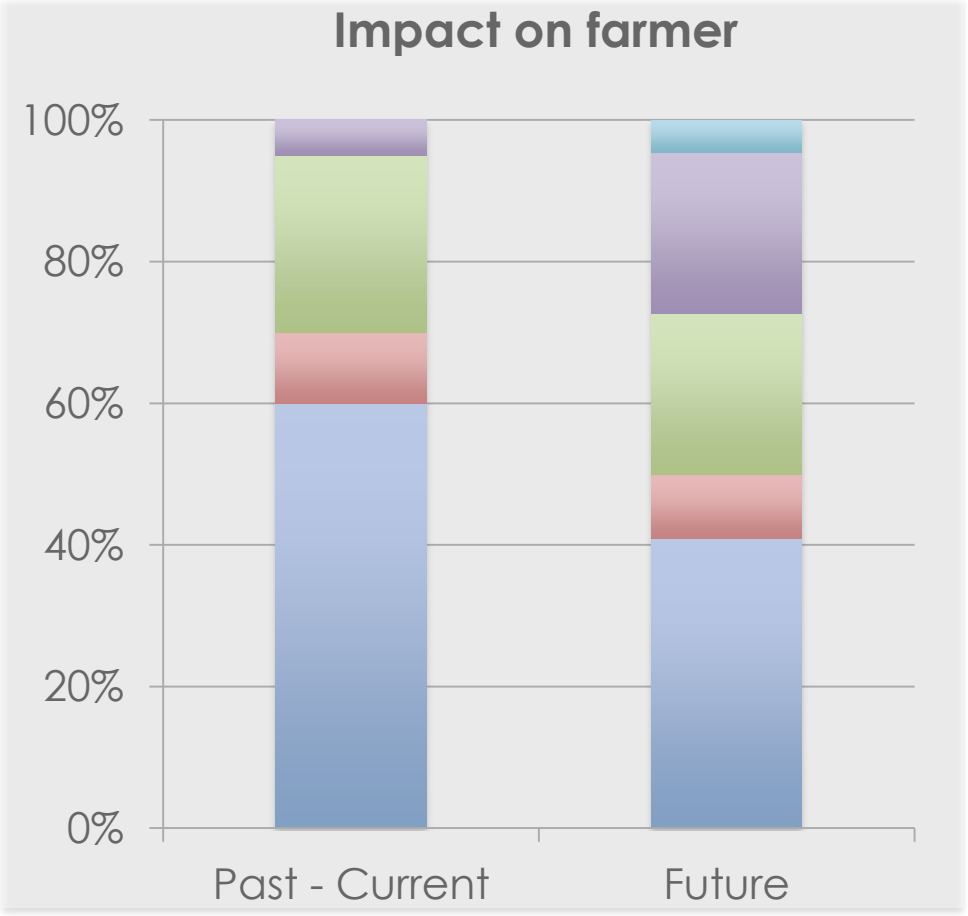
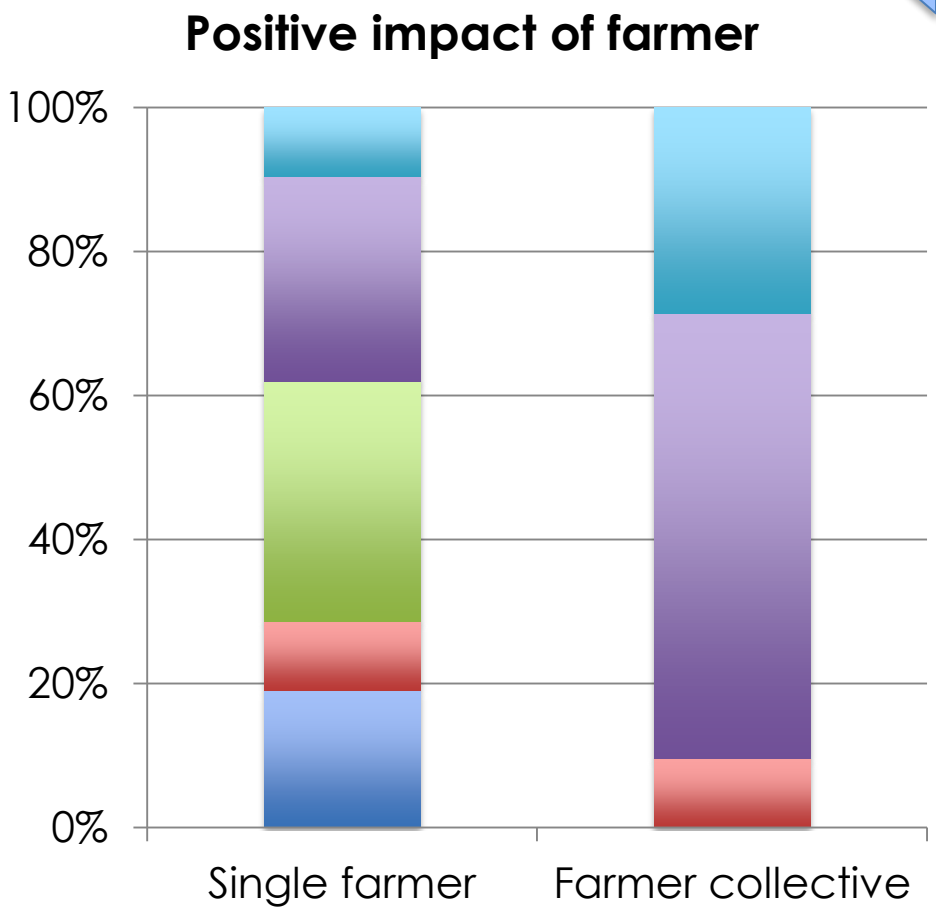
Stream abstraction



Management water scarcity; *In between farmers*

Interview responses





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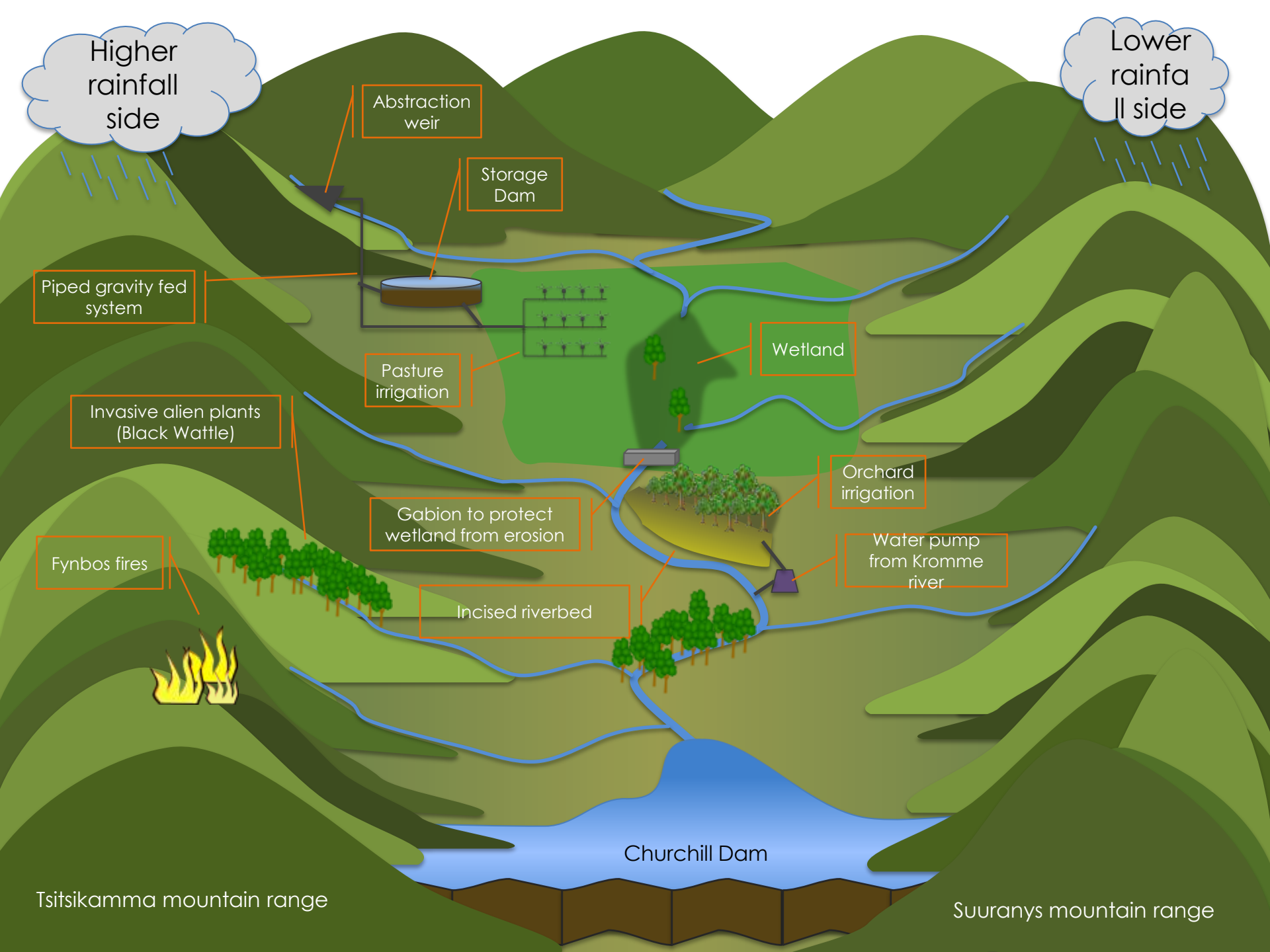
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Cooperation between natural resource users

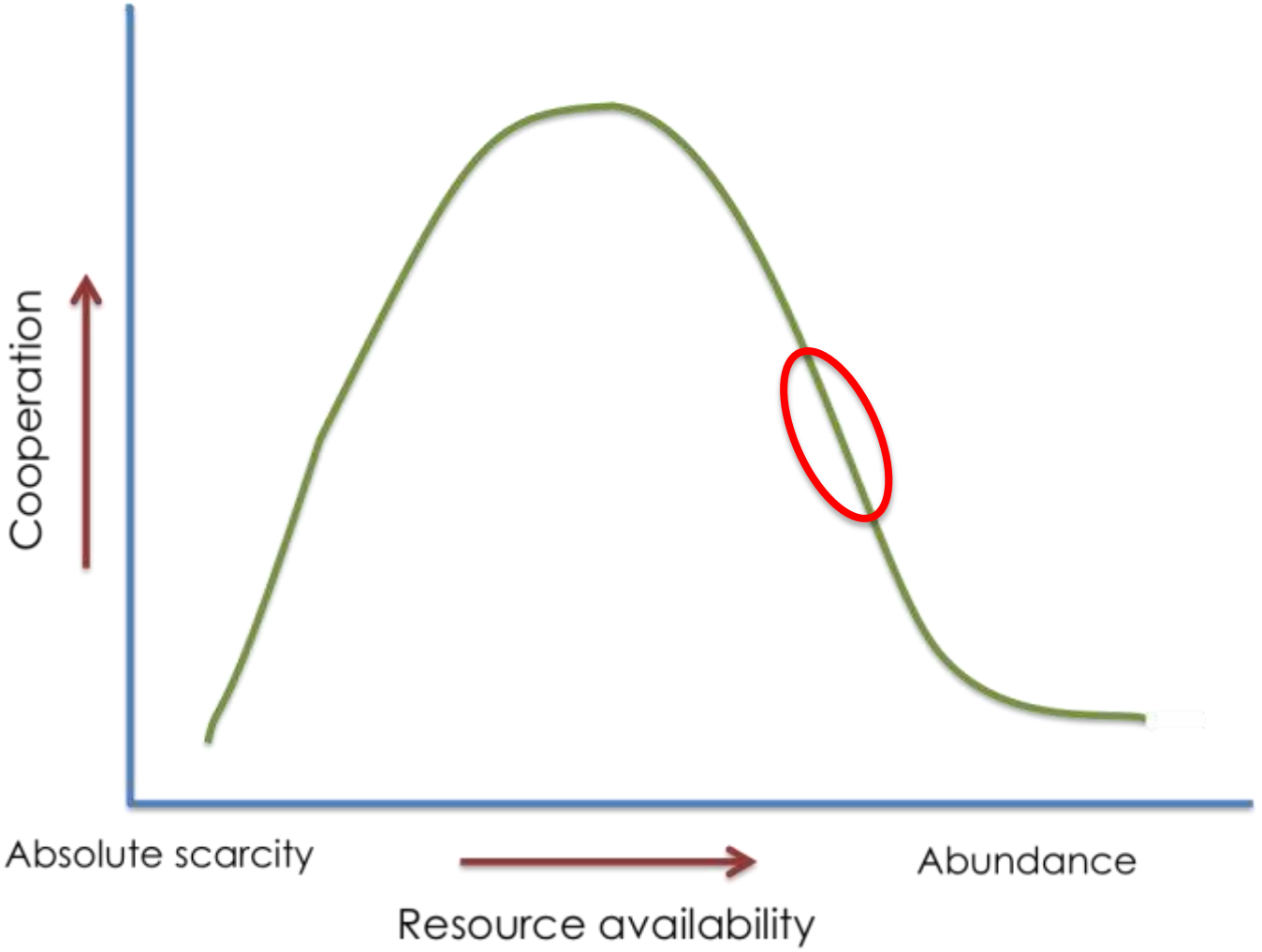


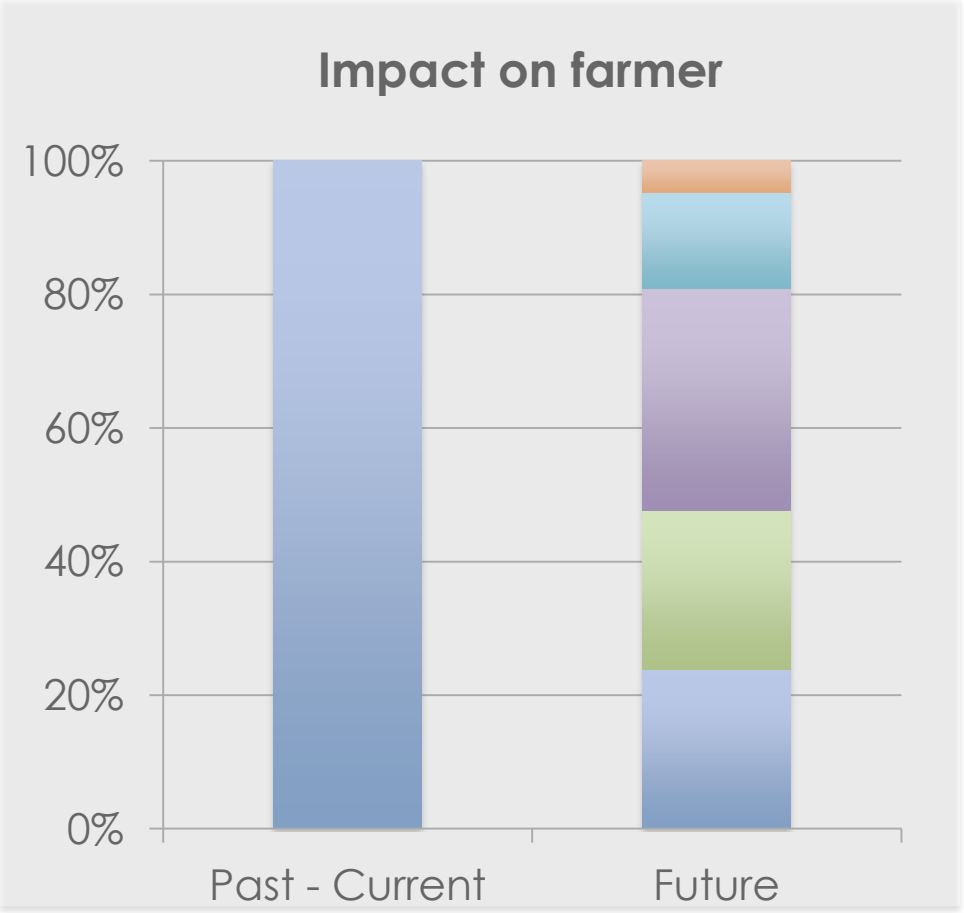
Figure 3: Graph relating value of cooperation to resource availability (adapted from Uphoff et al., 1990)

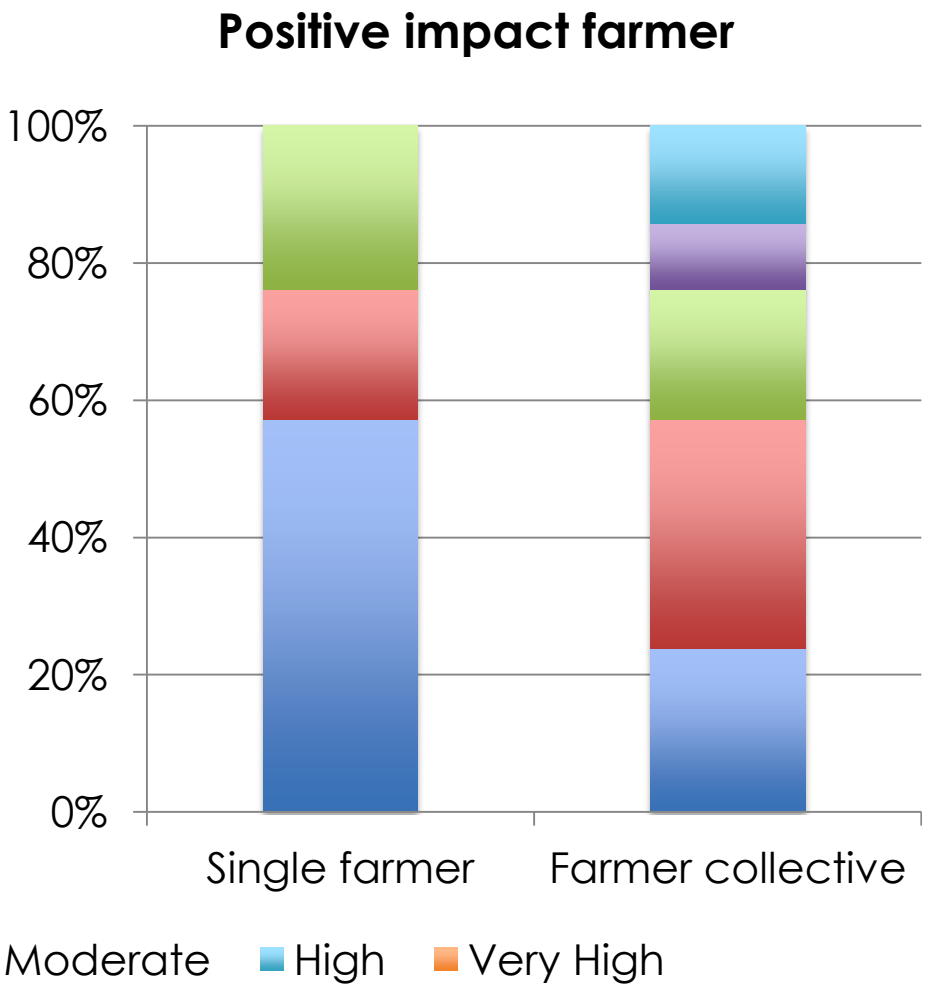
Political water scarcity

- *Political scarcity is scarcity because people are excluded from access to available water resources because of political reasons.*

Political water scarcity

Interview responses





NMBM interview quote

Do you need the farmers to secure your water supply?

"I don't think so, no we only need our water rights. With farmers there is a possibility of pollution. Basically you need regulation in the Kromme River catchment area. Contact with farmers would be through DWA."

DWA interview quote

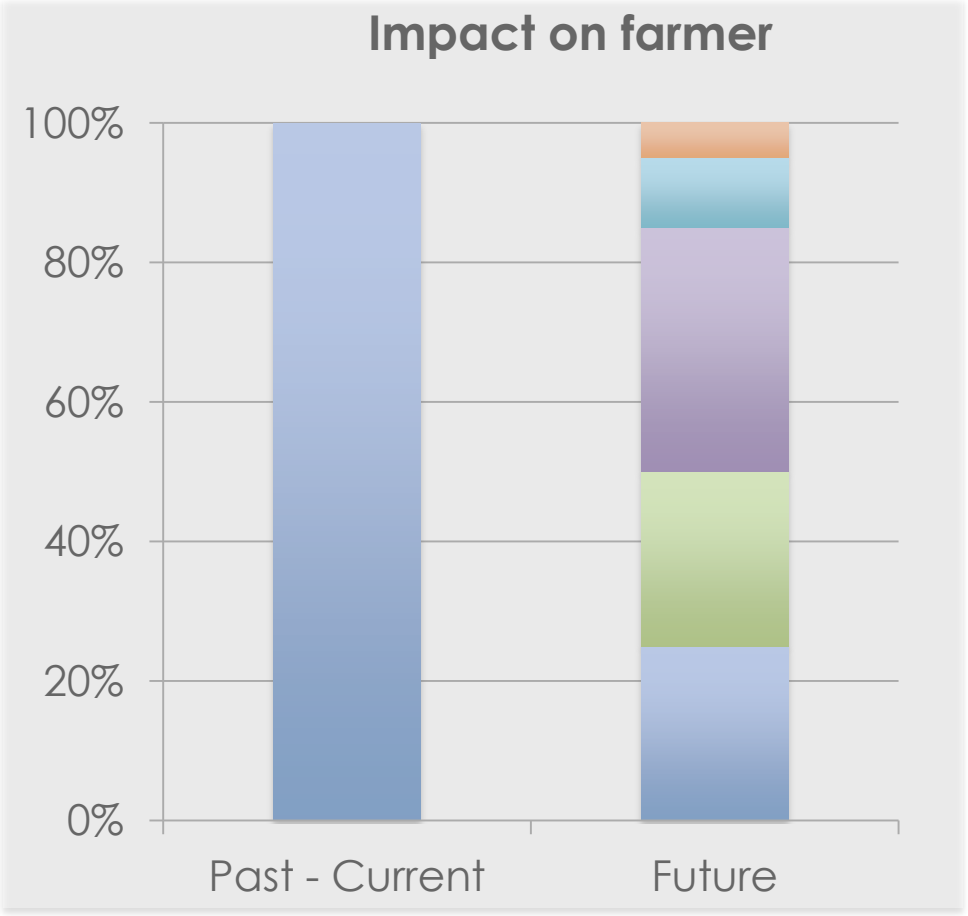
What do you see as the main issue around water management in the Kromme River in relation to emerging farmers?

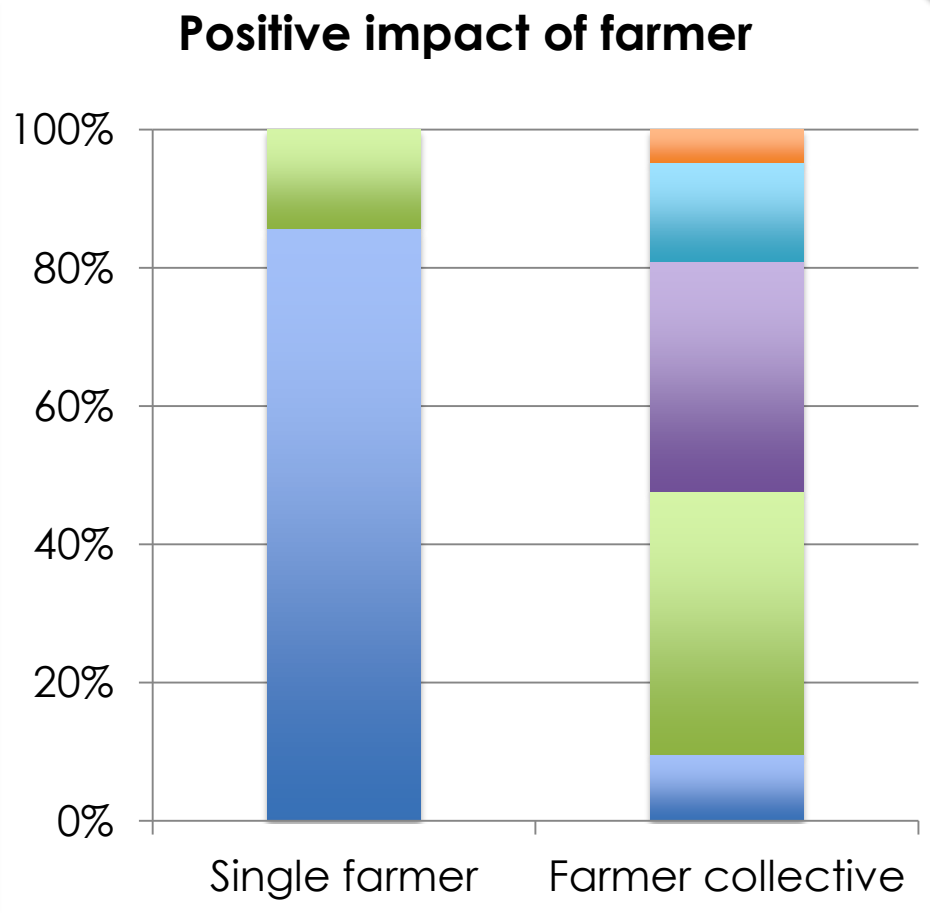
"There is no opportunity for new emerging farmers, because of the water issue, unless emerging farmers buy water rights from commercial farmers."

"The WAR program, is going to happen. We do not compensate if water rights are taken unlawful. If it is lawful, we have to compensate, for investment and losses."

Management water scarcity; *Government*

Interview responses





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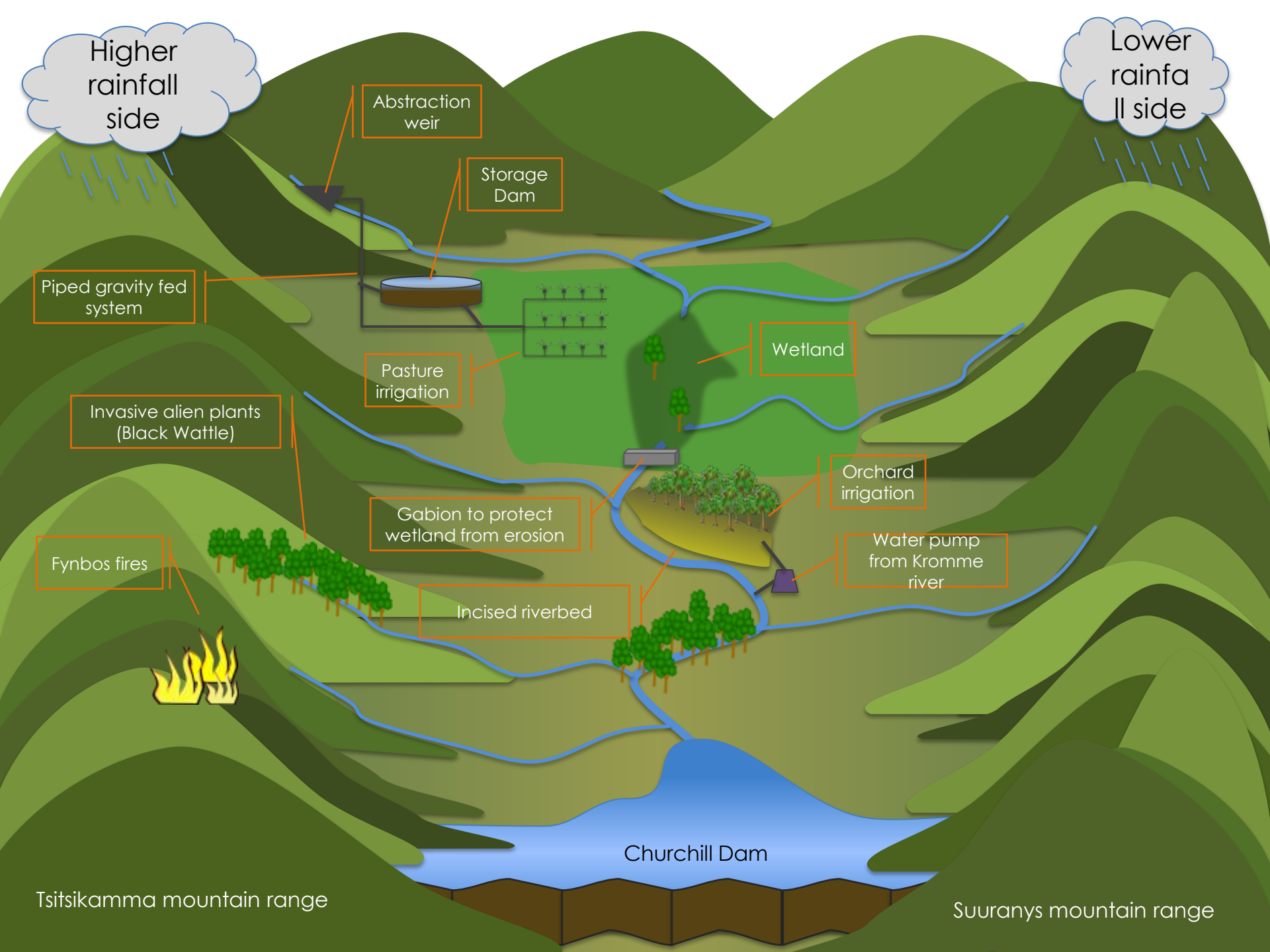
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DWA interview quote

What do you see as the main issue around water management in the Kromme River?

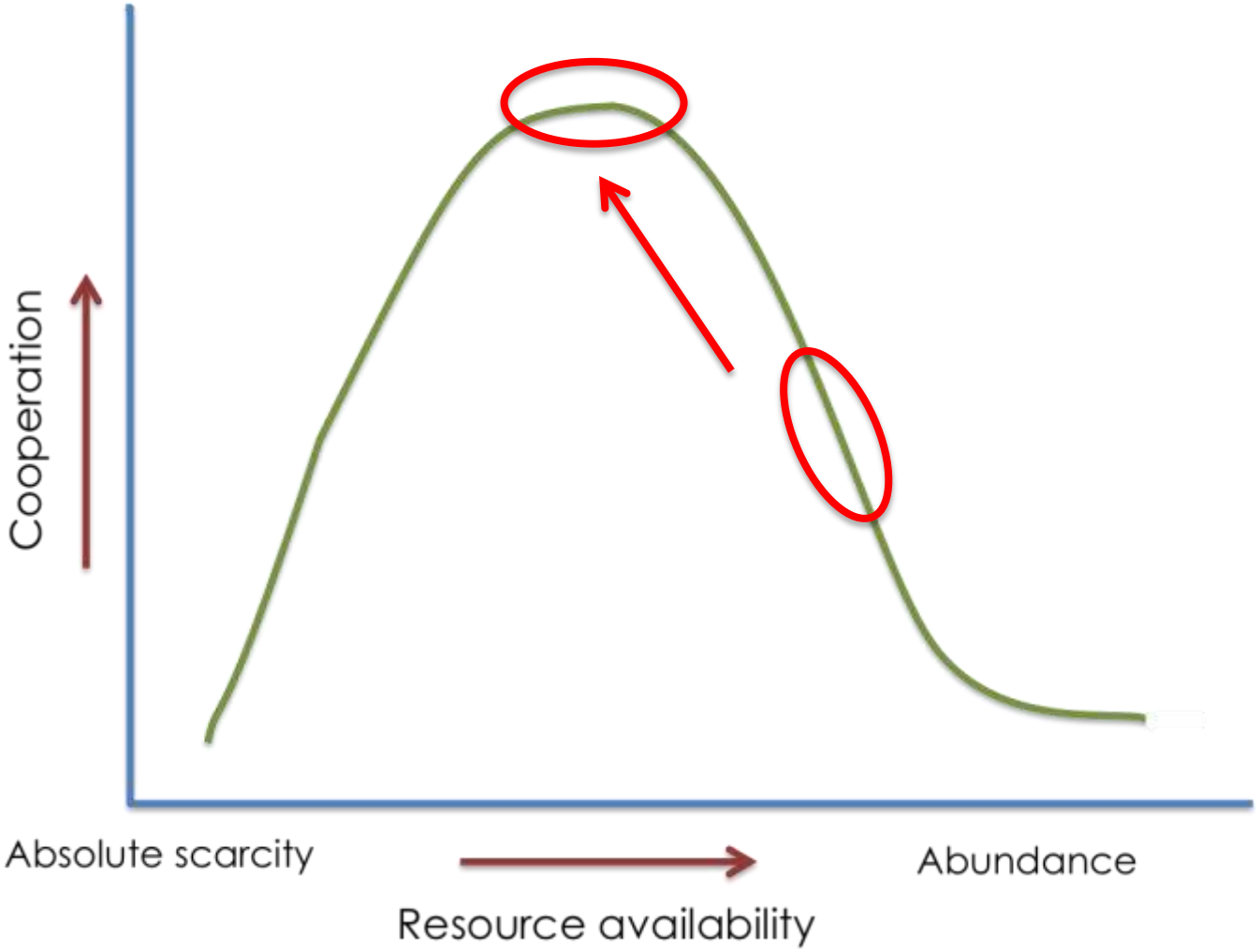
"Illegal activity, we suspect that some farmers have increased there water use activity. We have seen the shortage of water happening on the low flow component, that's why we suspect there is an over abstraction."

"If eventually water resources in the Kromme are still to much under stress, you start cutting from agriculture."

"A farmer who is applying now will not get a new water right in the Kromme"

"No dam building also"

Cooperation between natural resource users



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