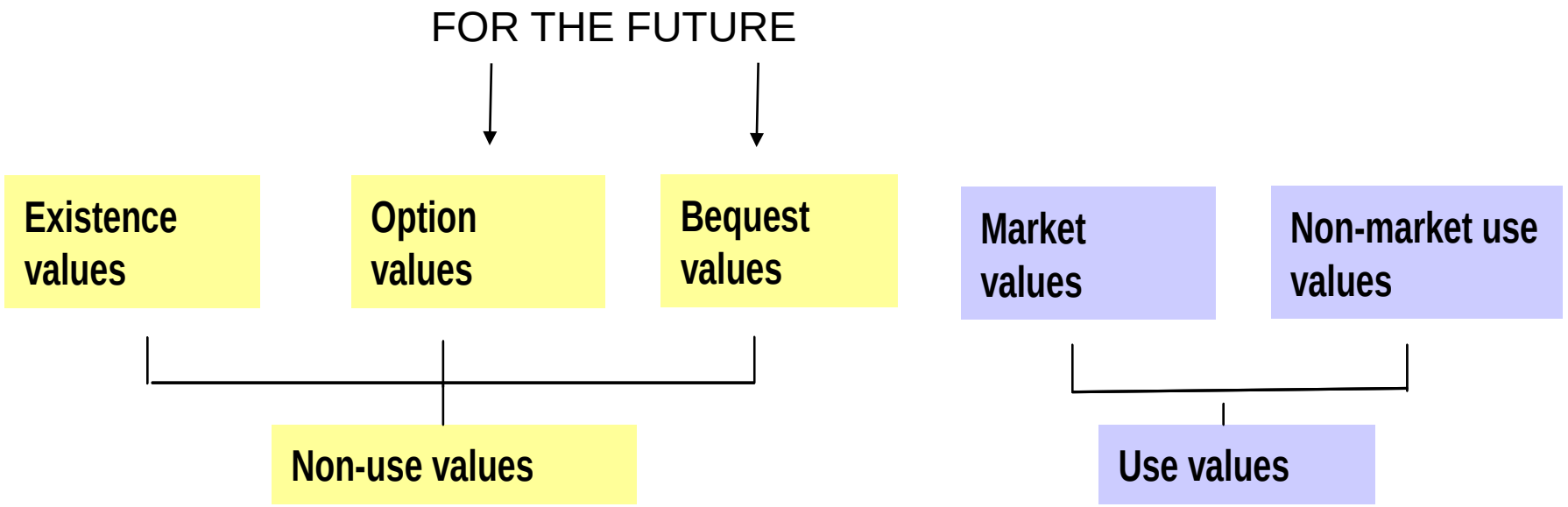
RESILIENCE, ADAPTABILITY AND TRANSFORMABILITY IN THE GOULBURN-BROKEN CATCHMENT

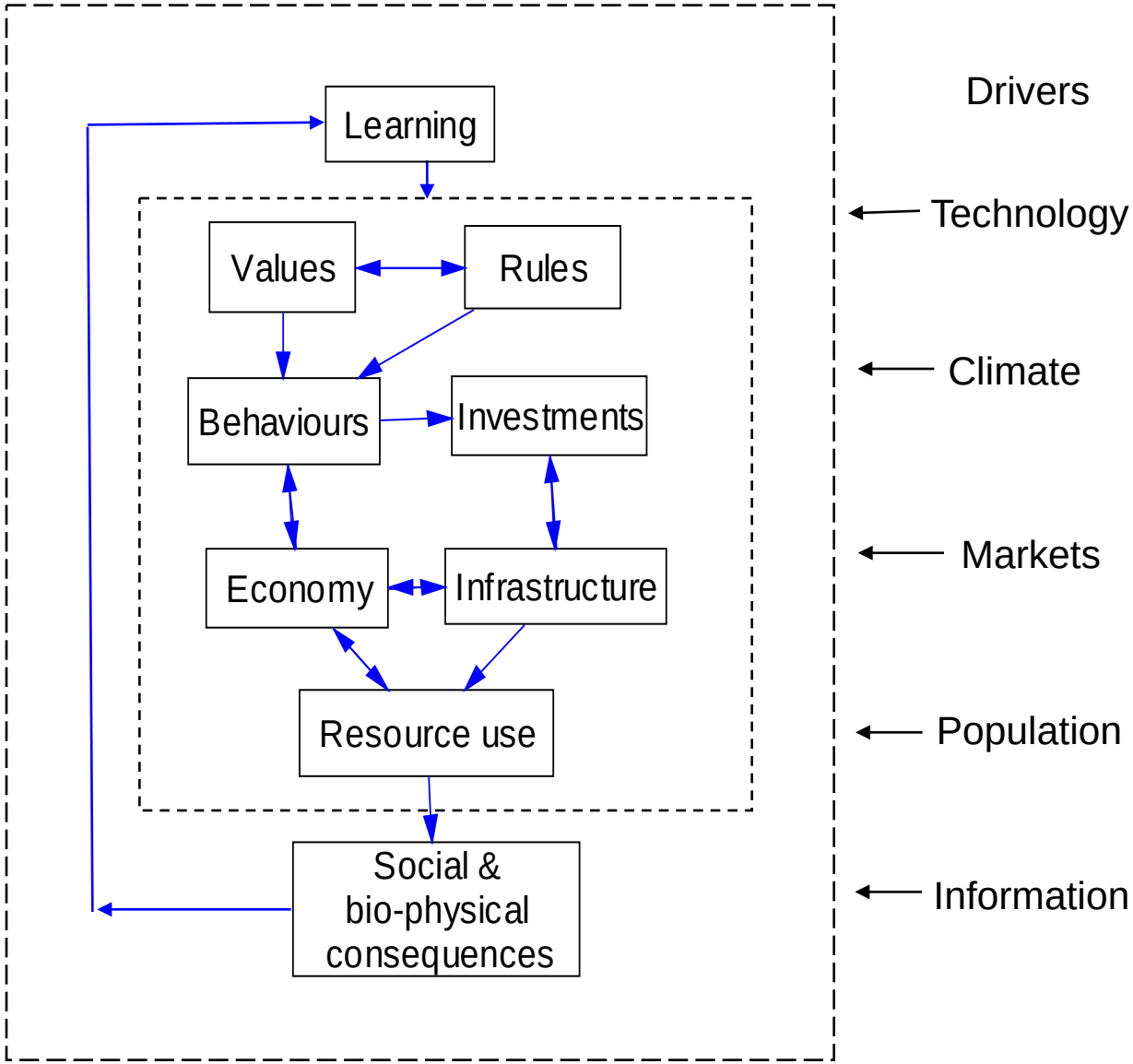
Presented by Nick Abel

Based on a paper by Brian Walker, Nick Abel, Marty Anderies and Paul Ryan

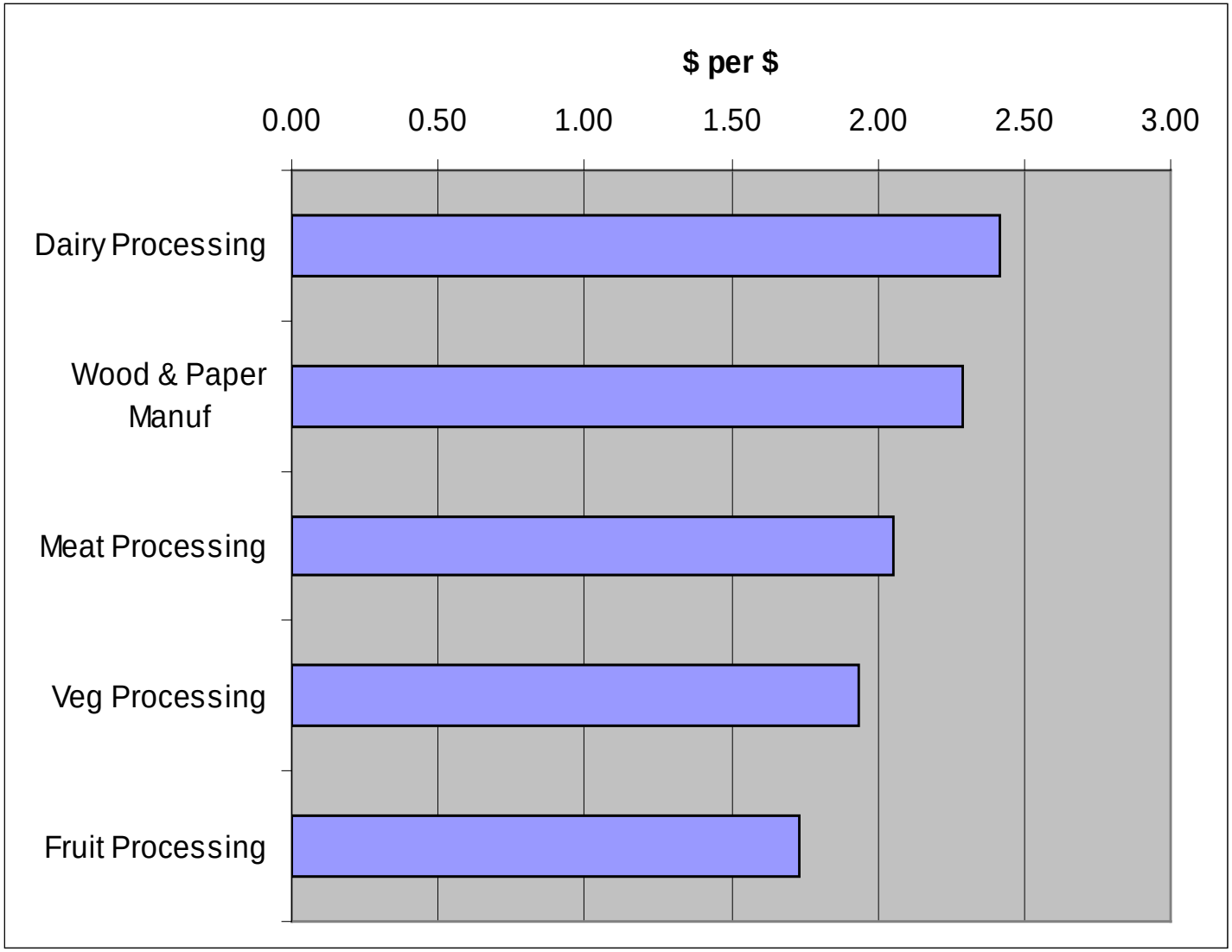
What are we trying to sustain?

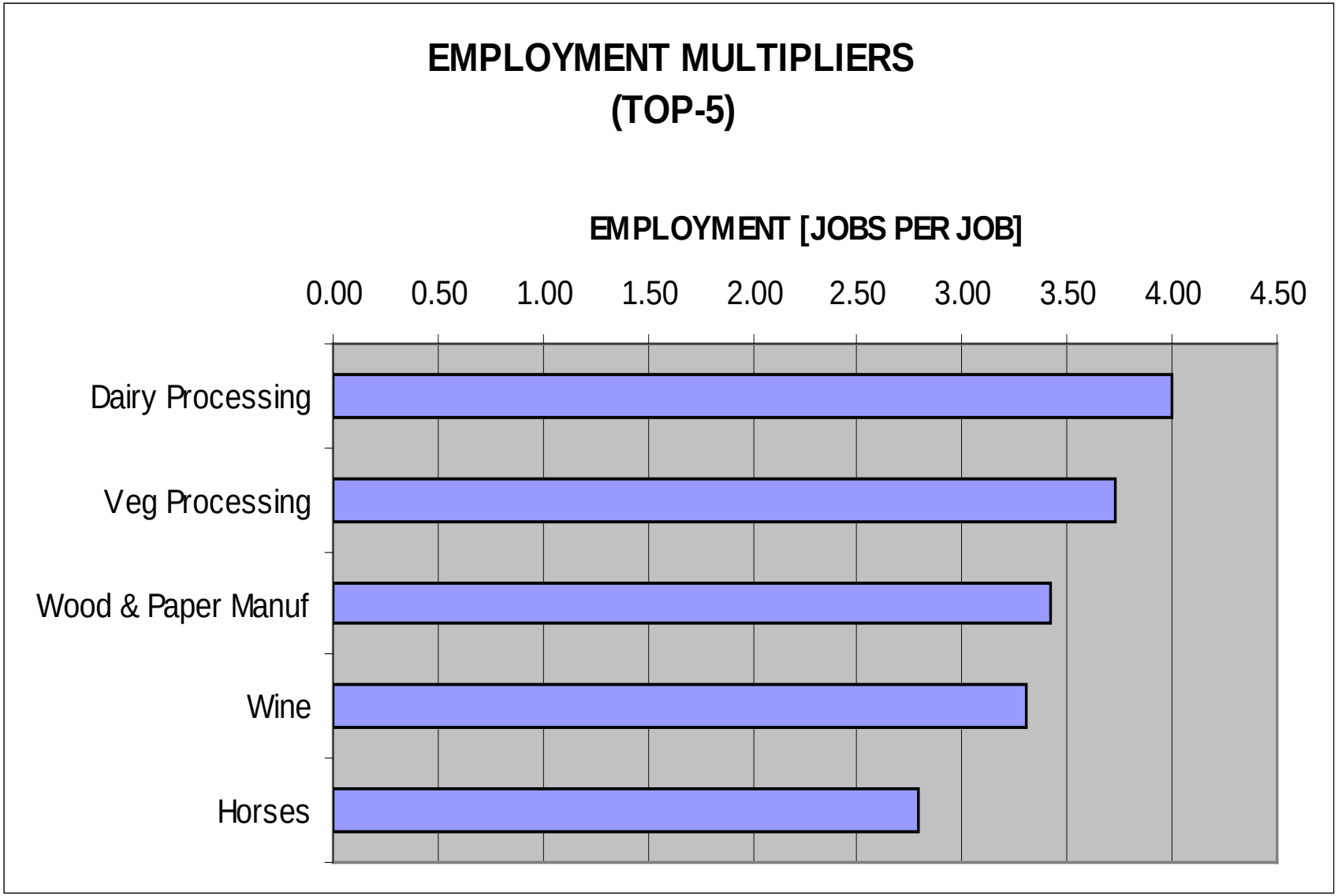


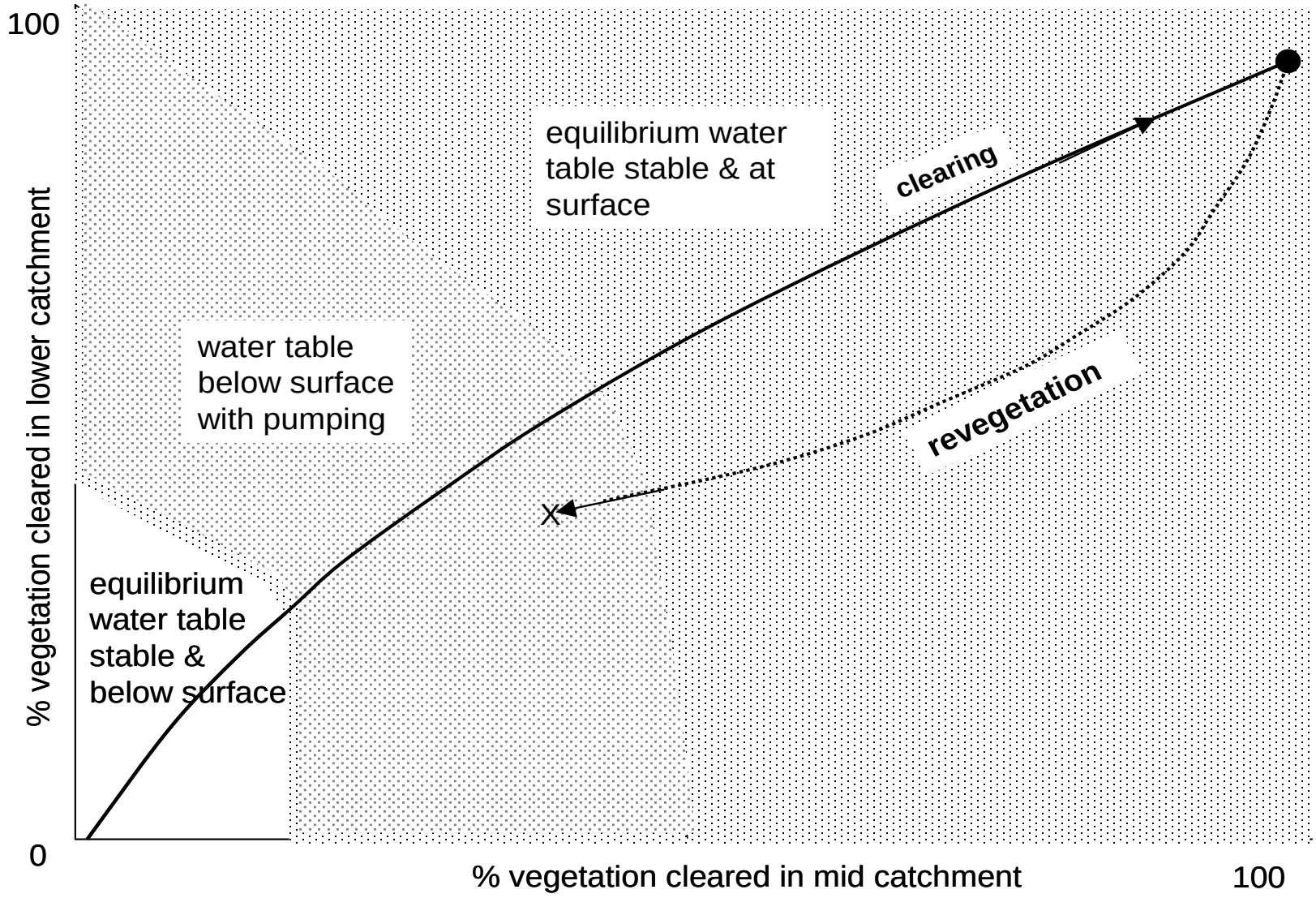
How a social ecological system changes

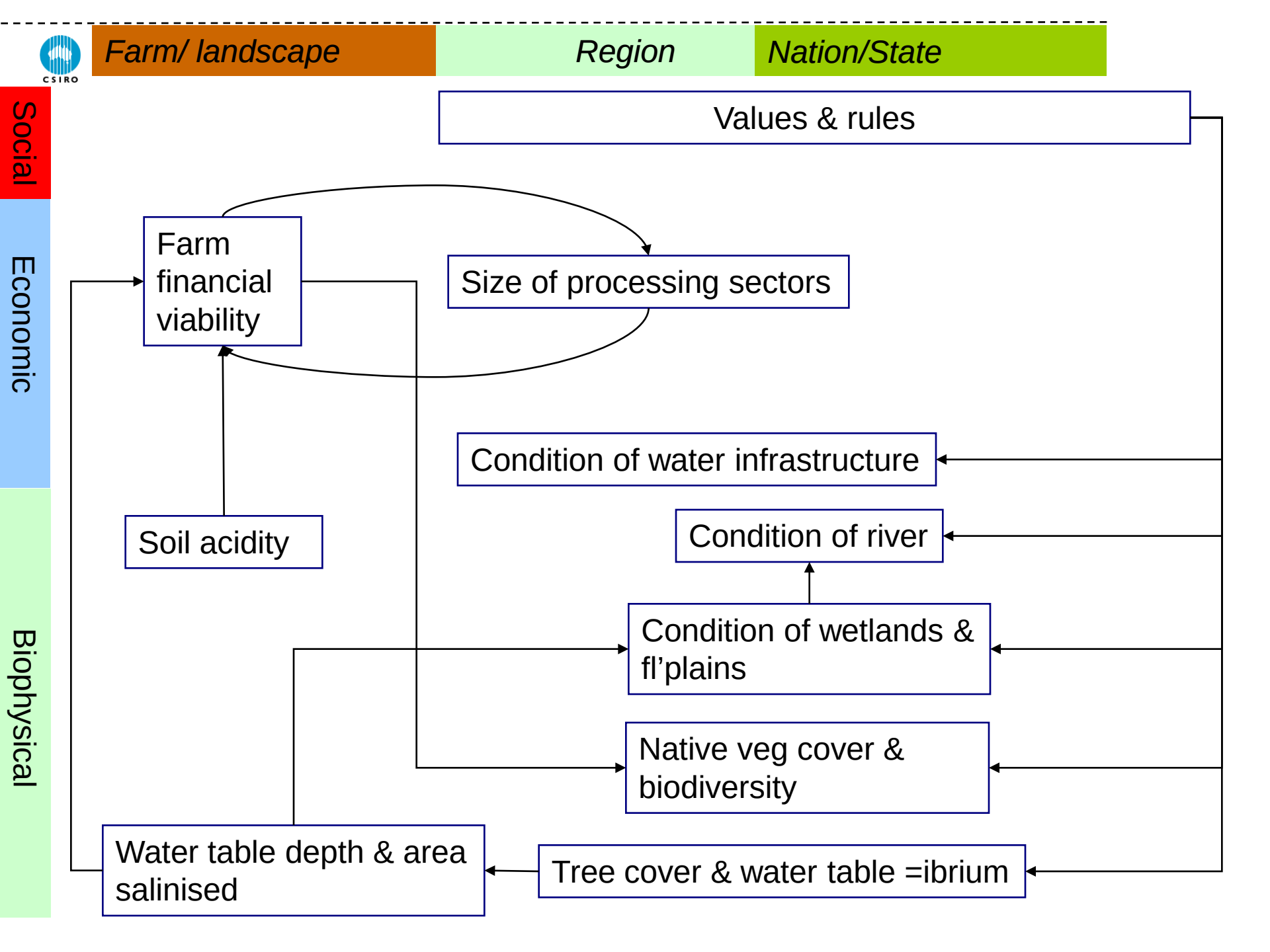


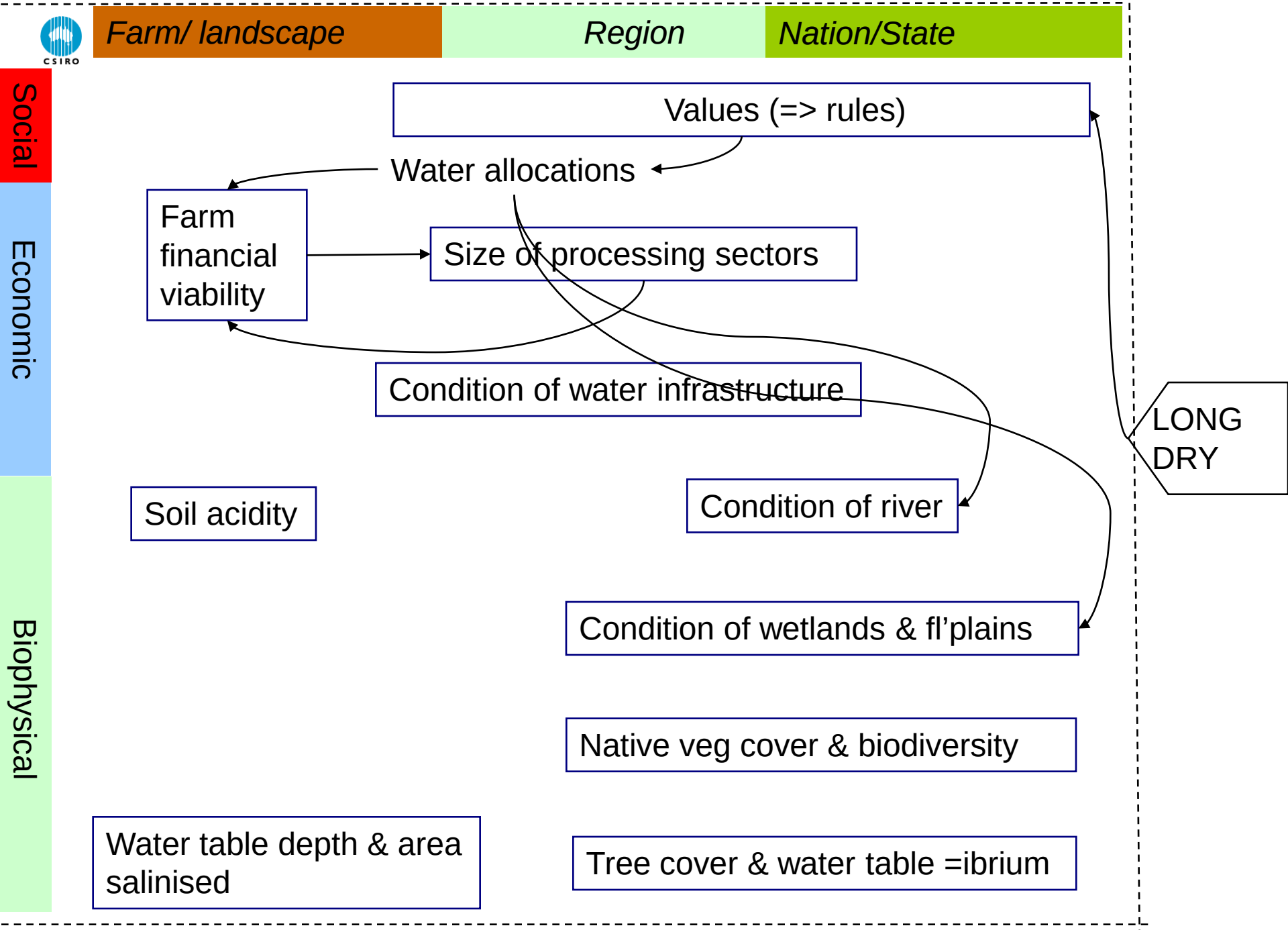
TOP 5 ECONOMIC MULTIPLIERS IN THE GB REGION

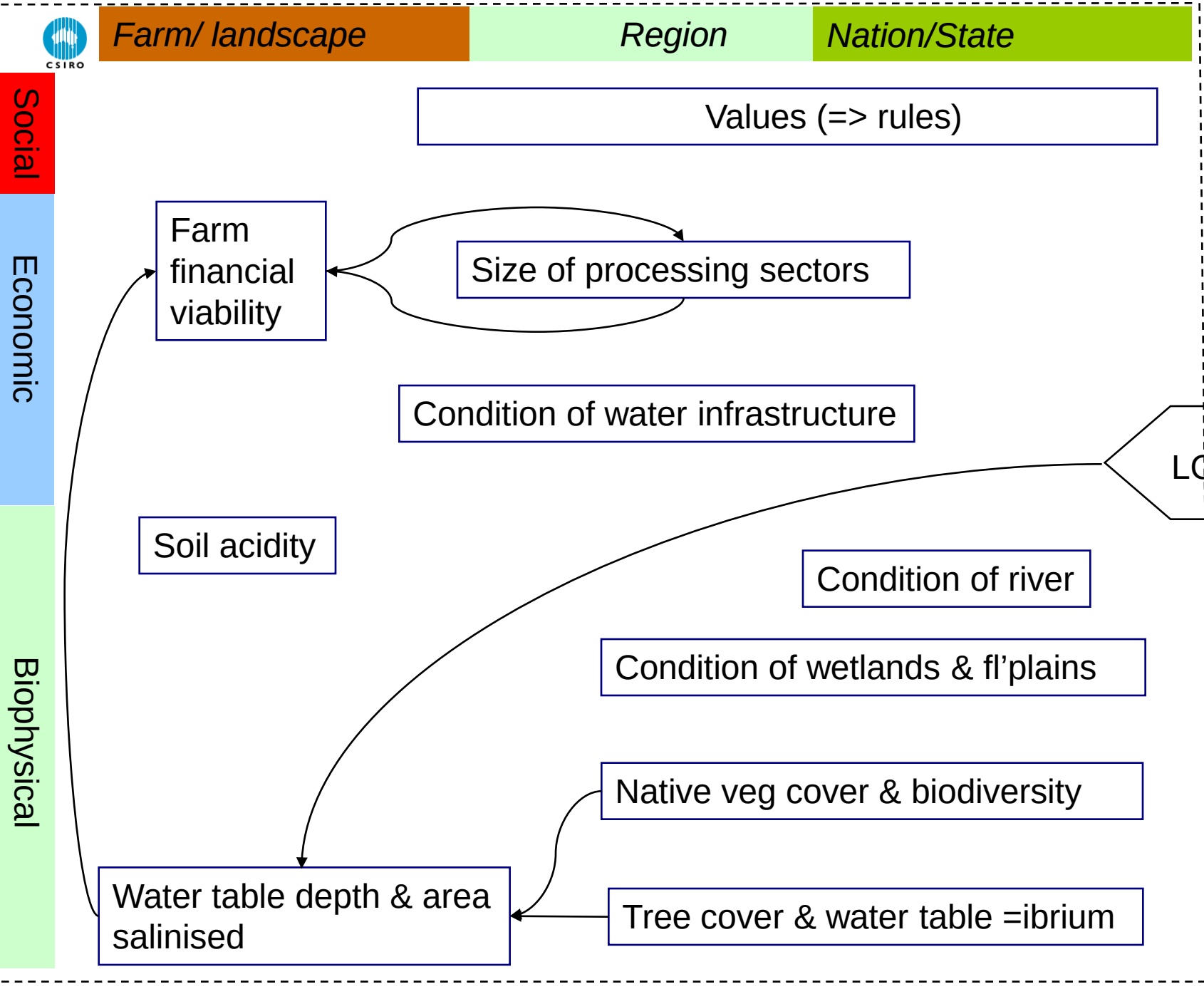


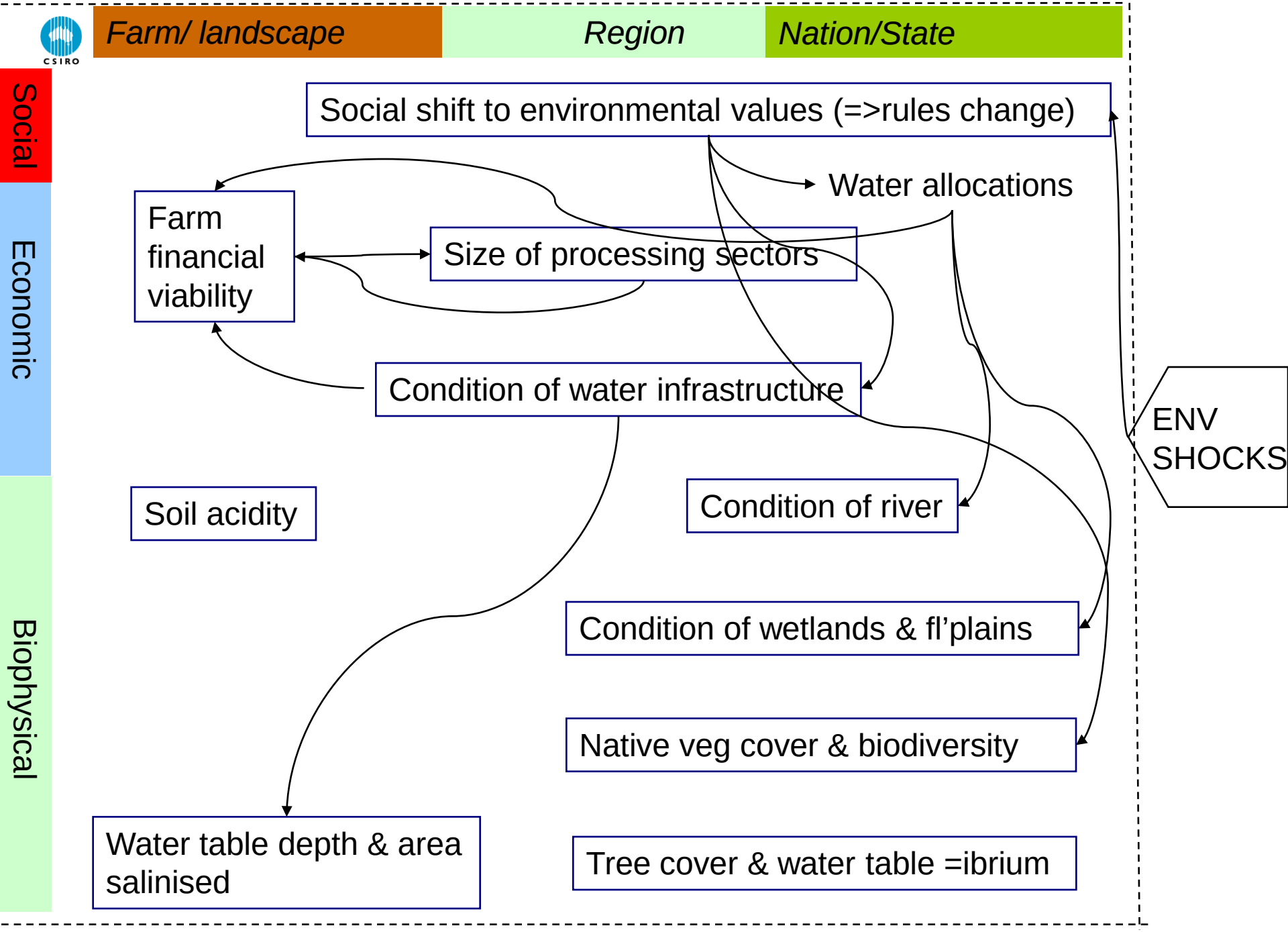

EMPLOYMENT MULTIPLIERS
(TOP-5)
EMPLOYMENT [JOBS PER JOB]
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
Dairy Processing
Veg Processing
Wood & Paper Manuf
Wine
Horses


100
% vegetation cleared in lower catchment
0
equilibrium water table stable & at surface
clearing
water table below surface with pumping
revegetation
equilibrium water table stable & below surface
% vegetation cleared in mid catchment
100


Farm/ landscape
Region
Nation/State
Social
Economic
Biophysical
Values & rules
Farm financial viability
Size of processing sectors
Condition of water infrastructure
Soil acidity
Condition of river
Condition of wetlands & fl'plains
Native veg cover & biodiversity
Water table depth & area salinised
Tree cover & water table =ibrium


Farm/ landscape
Region
Nation/State
Social
Economic
Biophysical
Values (=> rules)
Water allocations
Farm financial viability
Size of processing sectors
Condition of water infrastructure
LONG DRY
Soil acidity
Condition of river
Condition of wetlands & fl'plains
Native veg cover & biodiversity
Water table depth & area salinised
Tree cover & water table =ibrium


Farm/ landscape
Region
Nation/State
Social
Economic
Biophysical
Values (=> rules)
Farm financial viability
Size of processing sectors
Condition of water infrastructure
LONG WET
Soil acidity
Condition of river
Condition of wetlands & fl'plains
Native veg cover & biodiversity
Water table depth & area salinised
Tree cover & water table =ibrium


Farm/ landscape
Region
Nation/State
Social
Economic
Biophysical
Social shift to environmental values (=>rules change)
Water allocations
Farm financial viability
Size of processing sectors
Condition of water infrastructure
ENV SHOCKS
Soil acidity
Condition of river
Condition of wetlands & fl'plains
Native veg cover & biodiversity
Water table depth & area salinised
Tree cover & water table =ibrium

Value	Political influence of proponents	Consequences for rules and investment
Marketed irrigation use values	Strong because of lobbying power of sectors, and voting power of employees and associated social networks.	Strong property rights and secure access to water resources and infrastructure
Non-marketed use values	Strong for recreation because of number of voters enjoying recreation. Indigenous groups lobby separately to secure control over traditional lands, so far without significant gains.	Public provision of parks and reserves, with secure formal allocation of water, but it is inadequate to maintain the ecological processes that generate these values, and it is subordinate to irrigation allocations in droughts
Intrinsic values	Some influential lobbying by non-governmental conservation organisations, and significant power of urban votes. Lobbying by Indigenous groups is also aimed at maintaining intrinsic values.	
Bequest values	Negligible because beneficiaries are under age or unborn.	As above, with additional protection from heritage laws and regulations.
Option values	Negligible because no current use.	No explicit protection now.

Figure 6. Off-farm benefits from water savings options.

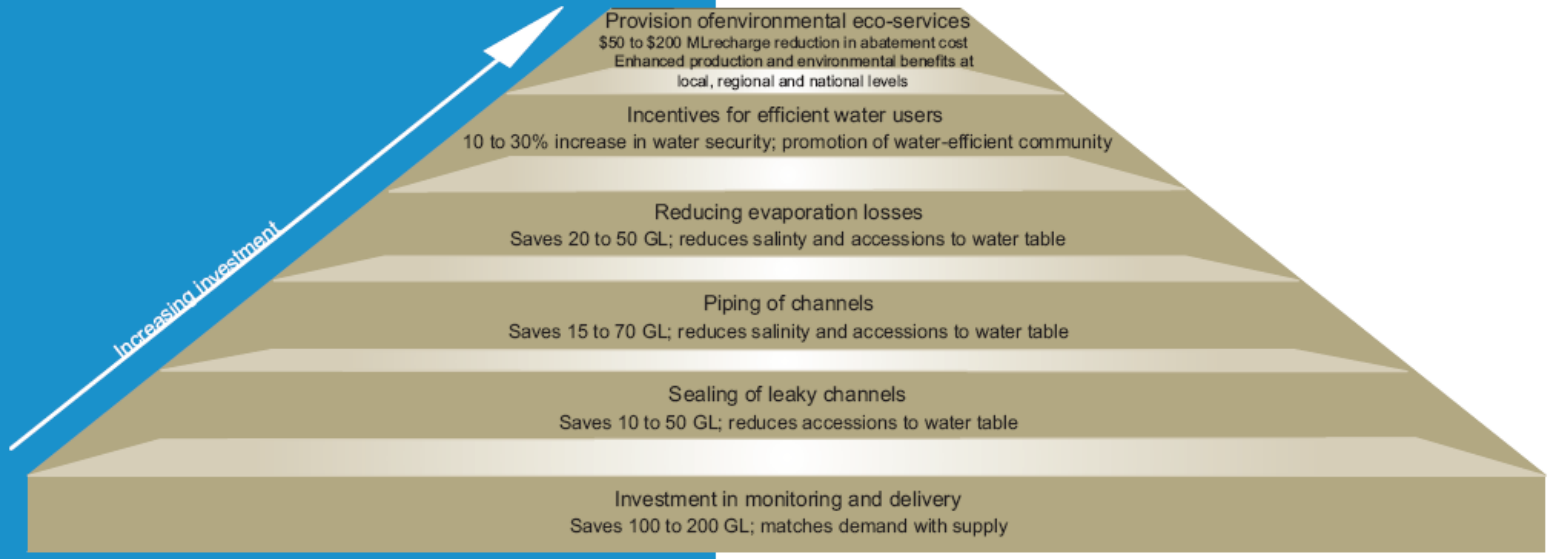
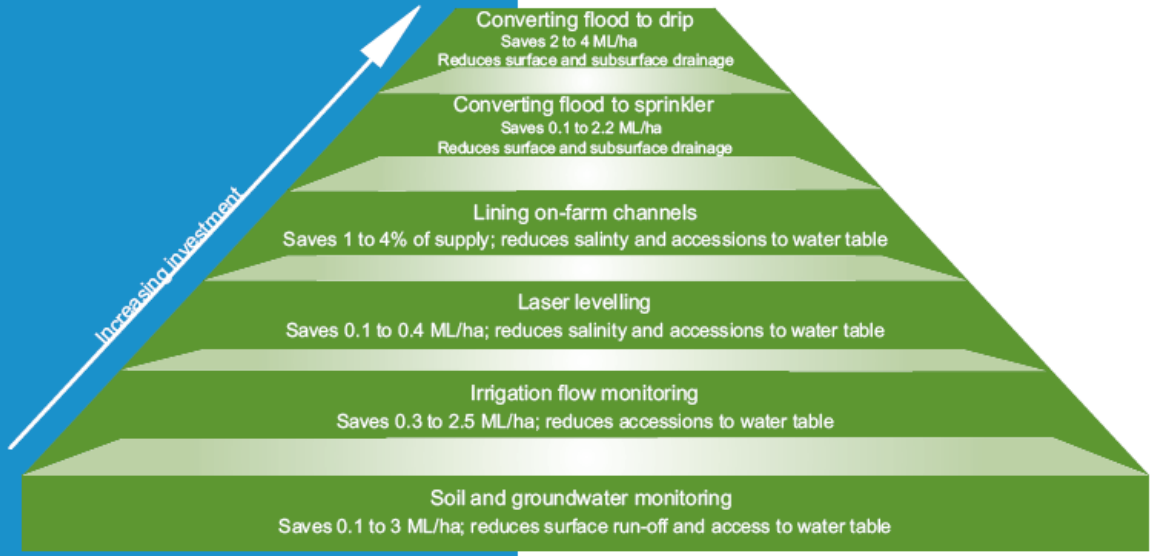
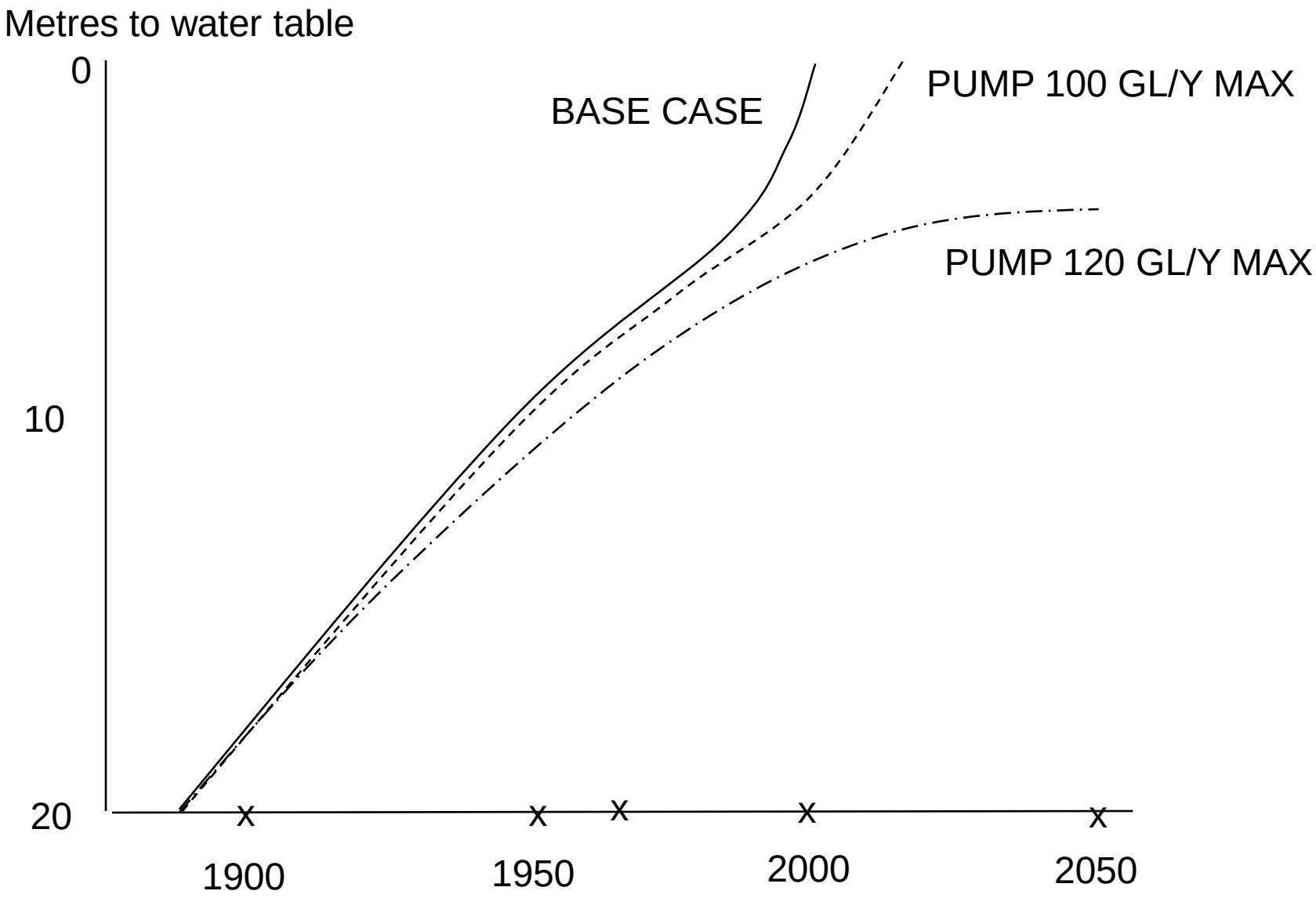


Figure 7. On-farm benefits from water savings options.

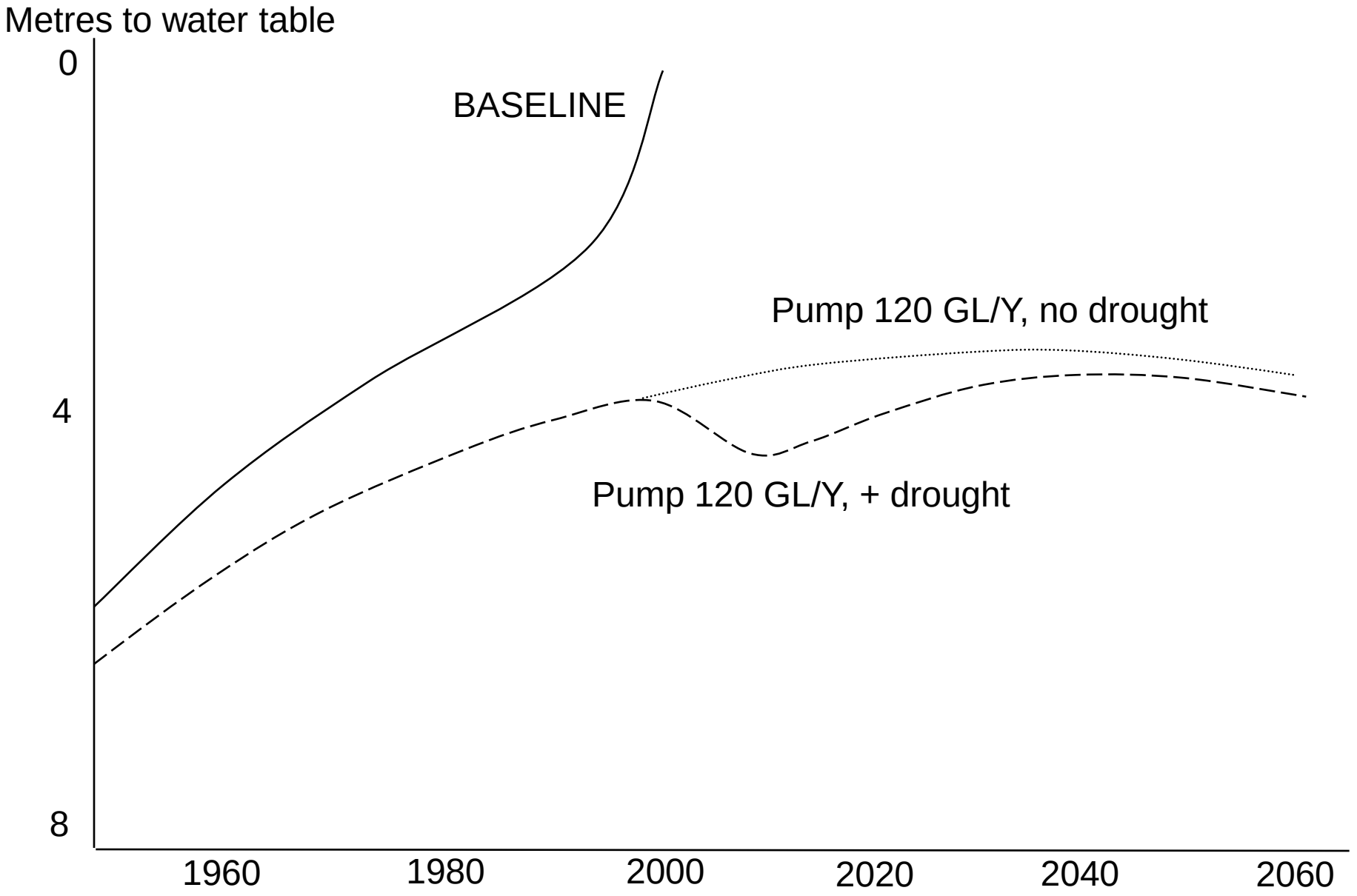


Anderies: pumping scenarios, past climate



ANDERIES: DROUGHT SCENARIOS, WITH PUMPING

RAINFALL DECLINES 20%, IRRIGATION USE DOWN 40%



ANDERIES: WET SCENARIOS, WITH PUMPING

RAINFALL DECLINES 20%, IRRIGATION USE DOWN 40%