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# A participatory approach to developing climate change adaptation options for NSW farming systems

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and Donald Gaydon

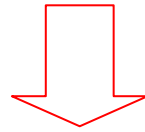
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National Research  
**FLAGSHIPS**  
Climate Adaptation

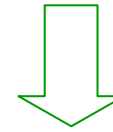


# Converting analysis into action

Vulnerability = fn( **Impacts** , **Adaptation** )



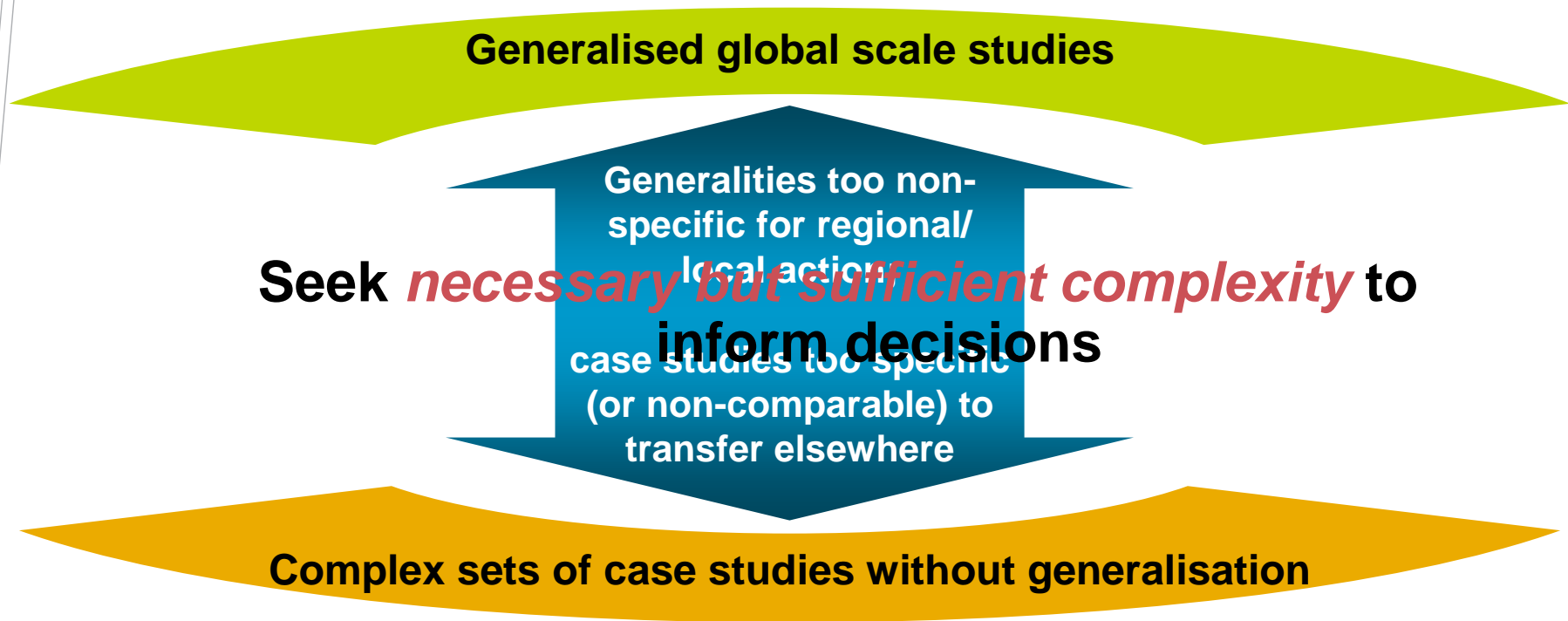
**Exposure &  
sensitivity**



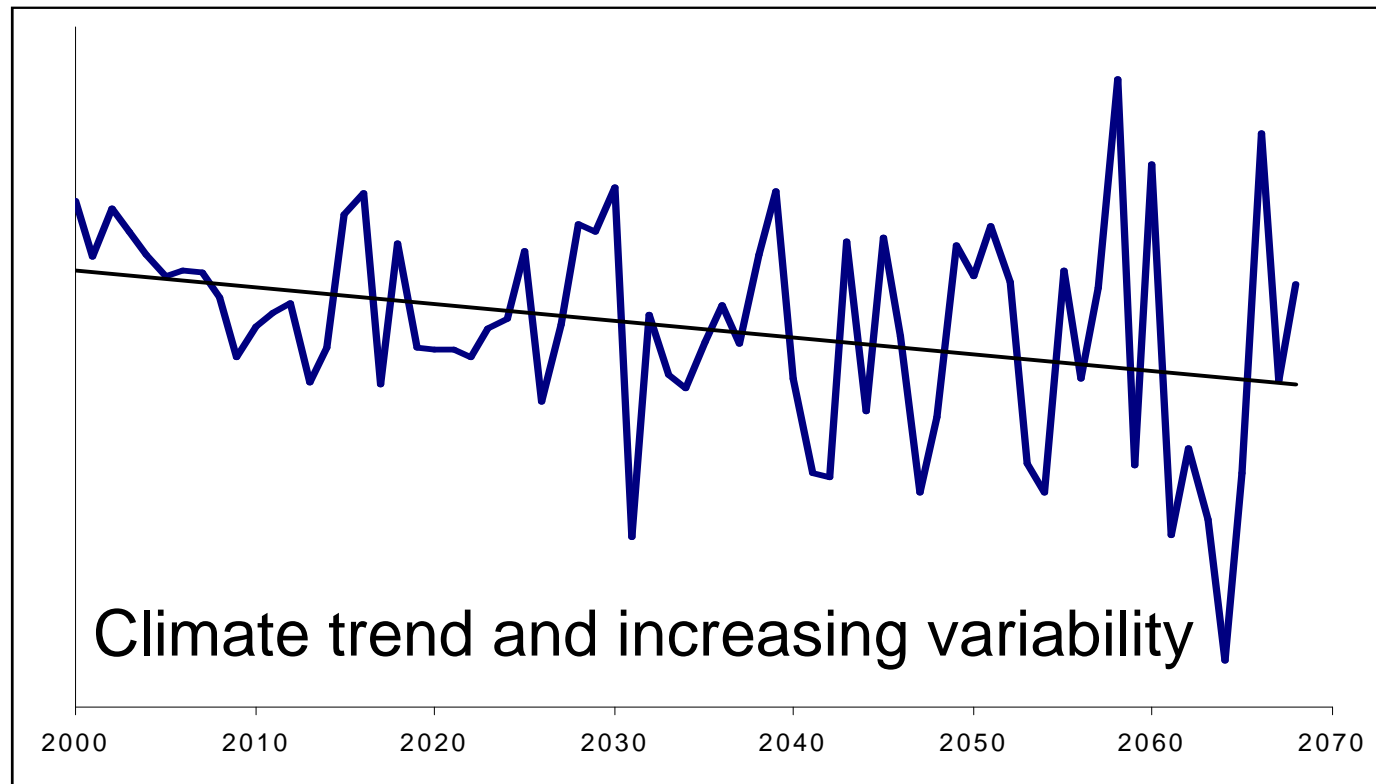
**adaptation options;  
adaptive capacity &  
resilience**

# Climate variability and change impacts on agricultural production

- Dearth of agricultural impact assessments at a range of scales few explore the value of adaptation.



# Effective adaptation will depend on which learning style is appropriate



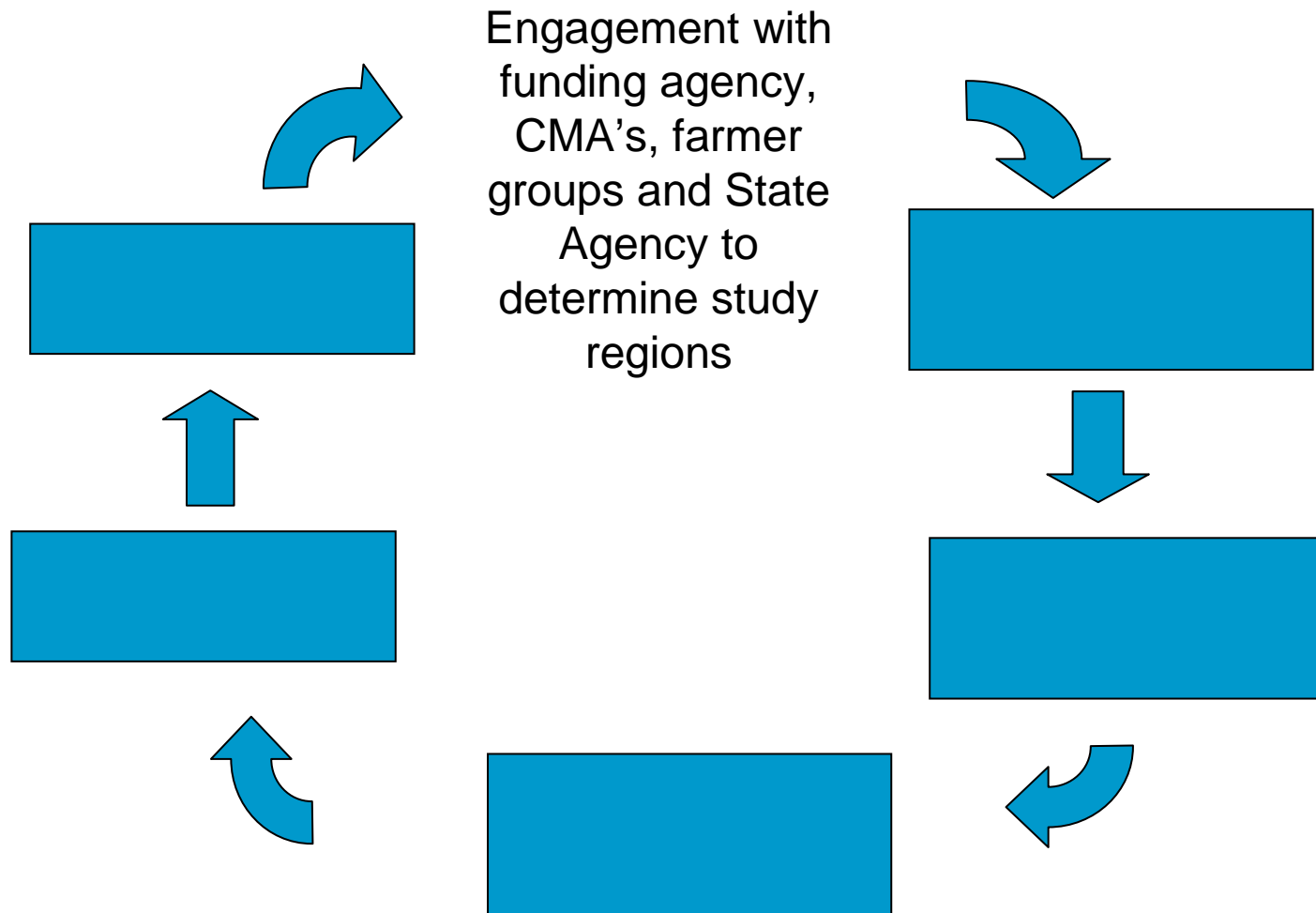
- If there is little or no net increase in climate variability, then “Special learning” styles may be effective.
- If there is both increased climate variability as well as underlying trends, then broader “social networks” as well as individual re-learning will be required.

# Participatory engagement key part of research

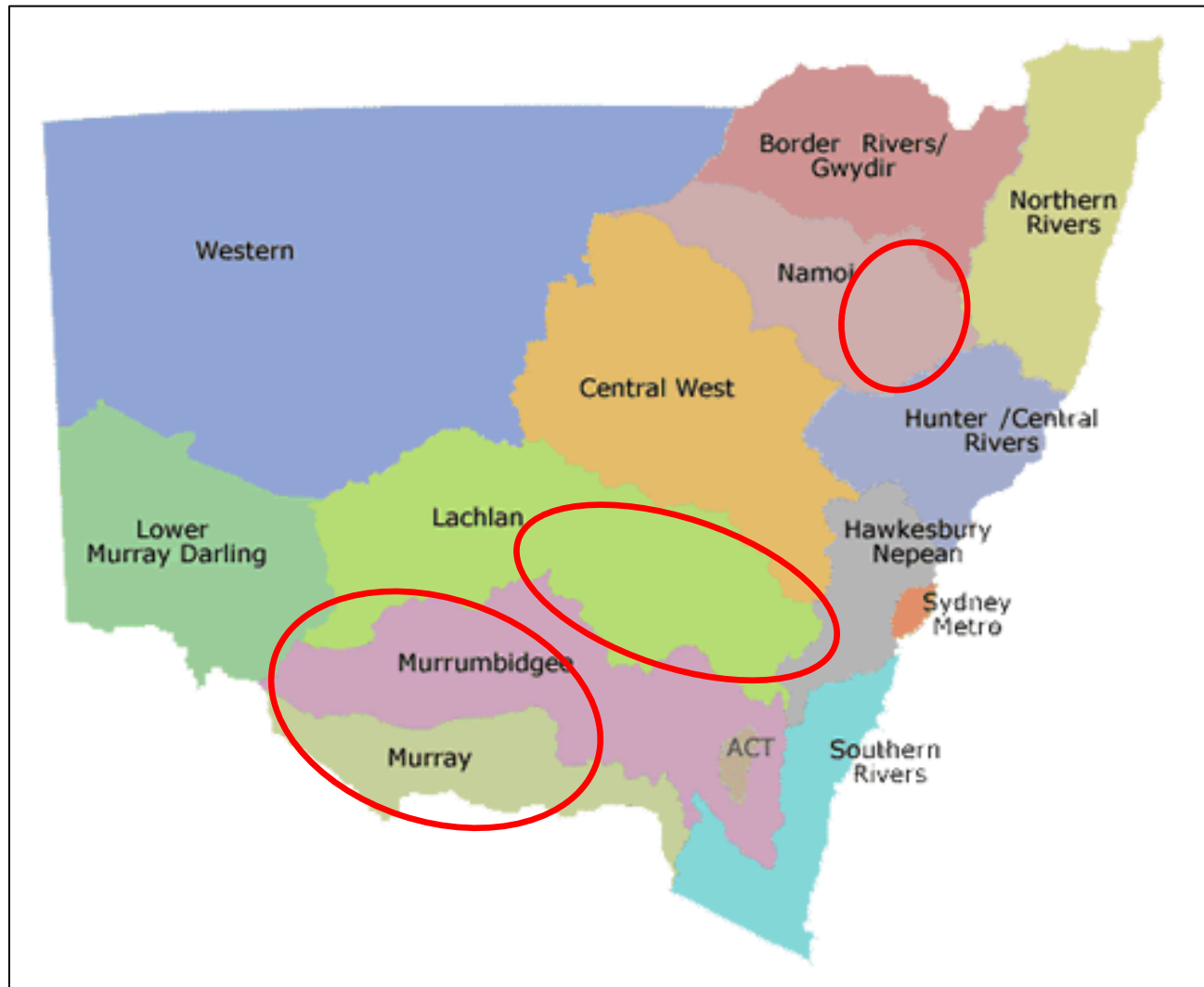
- Expert agricultural knowledge is with farmers.
- Ensuring 'real' cropping systems and feasible adaptation options are evaluated.
- Encourages solution-seeking and discussion of many potential options and supports some aspects of individual re-learning.



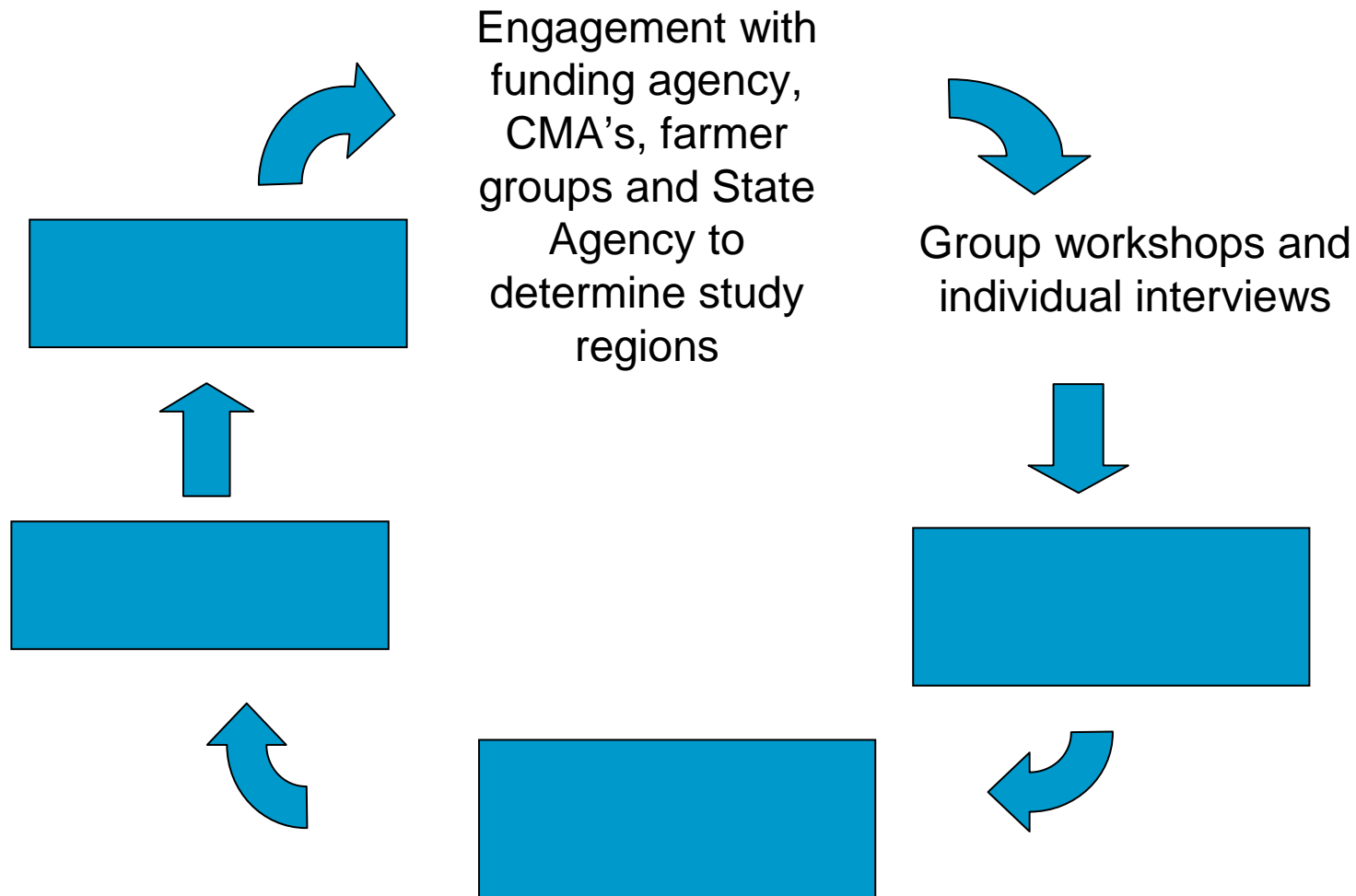
# Engagement Process



# Study regions



# Engagement Process



# Workshops and farmer interviews

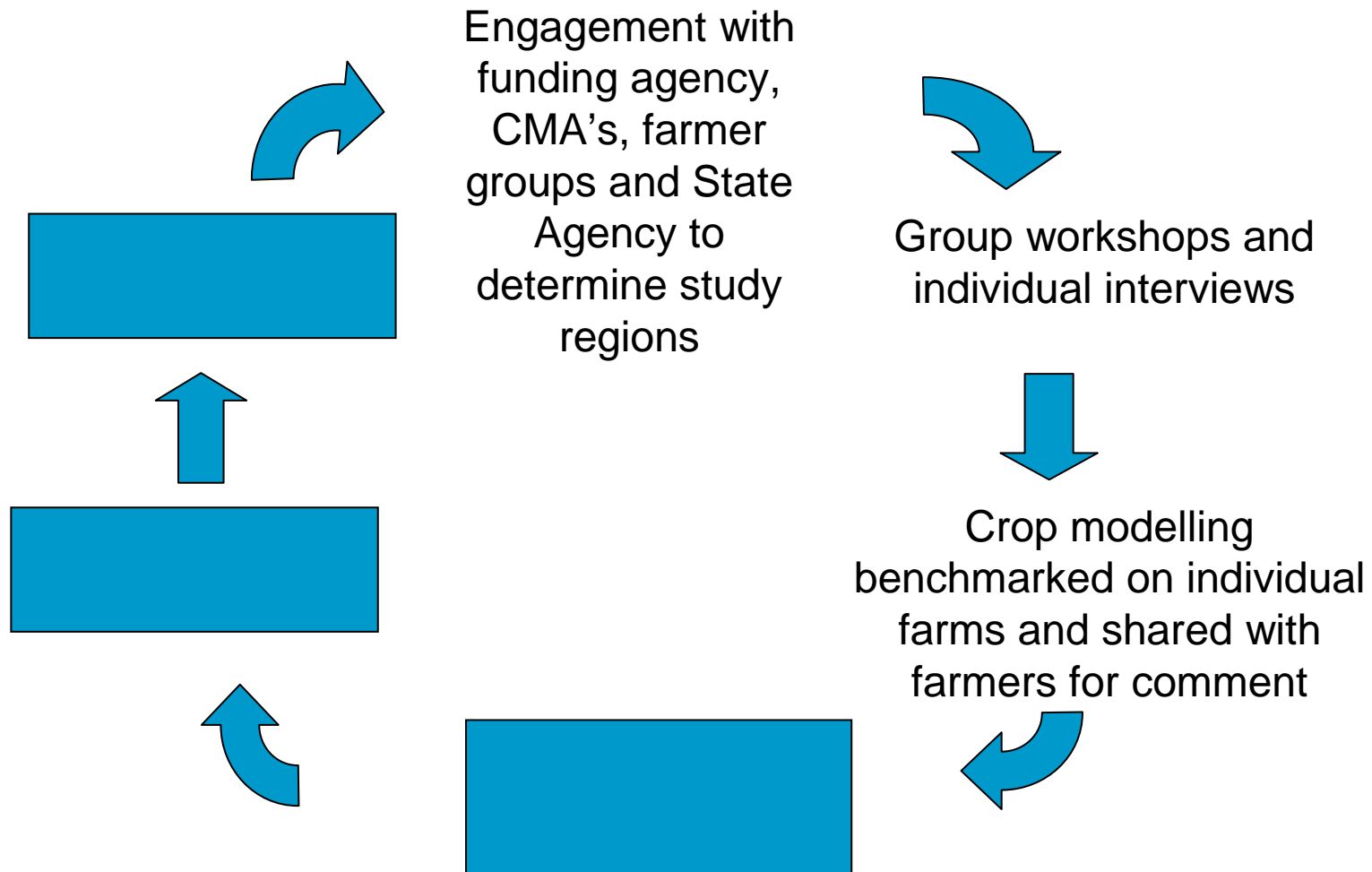
Crop rotations, sowing rates, fertiliser inputs, and management practices reflect on-farm operations  
Soil and climate data regionally representative

Adaptation options both of regional and individual interest e.g.

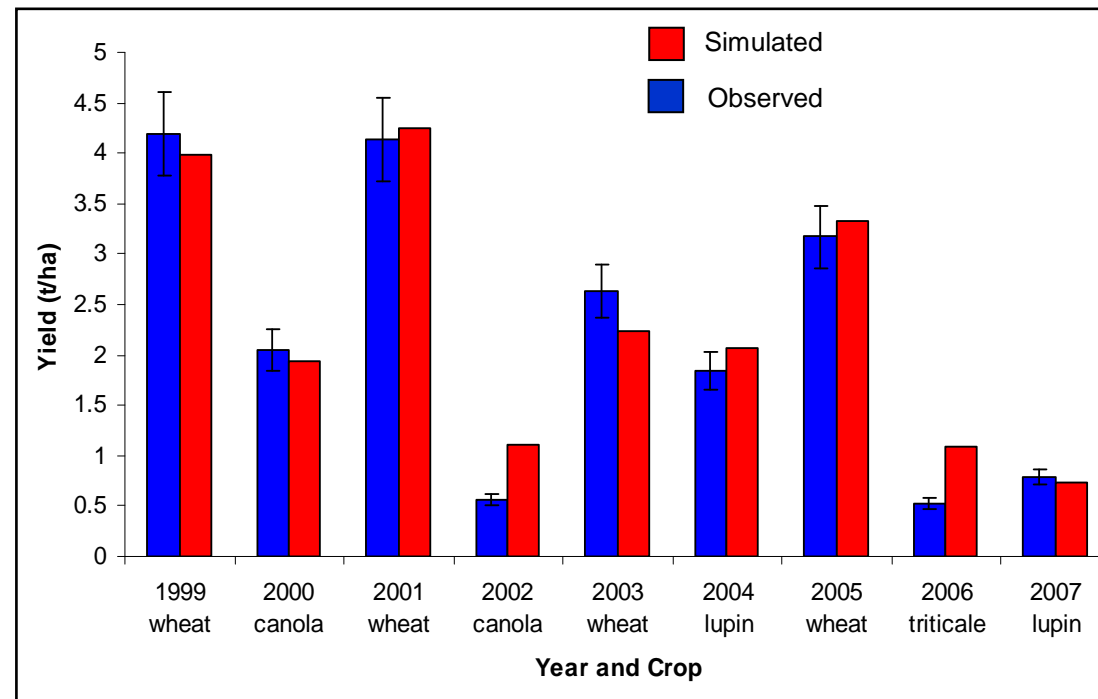
- Reduce the proportion of higher risk crops grown e.g. legumes
- Fallow on a regular basis on heavier soils (crop less).
- Select for shorter season varieties and more heat tolerant crops.
- Lower stocking rates and retain more stubble to conserve soil moisture.
- Consider growing more fodder crops and move out of wheat cropping.



# Engagement Process

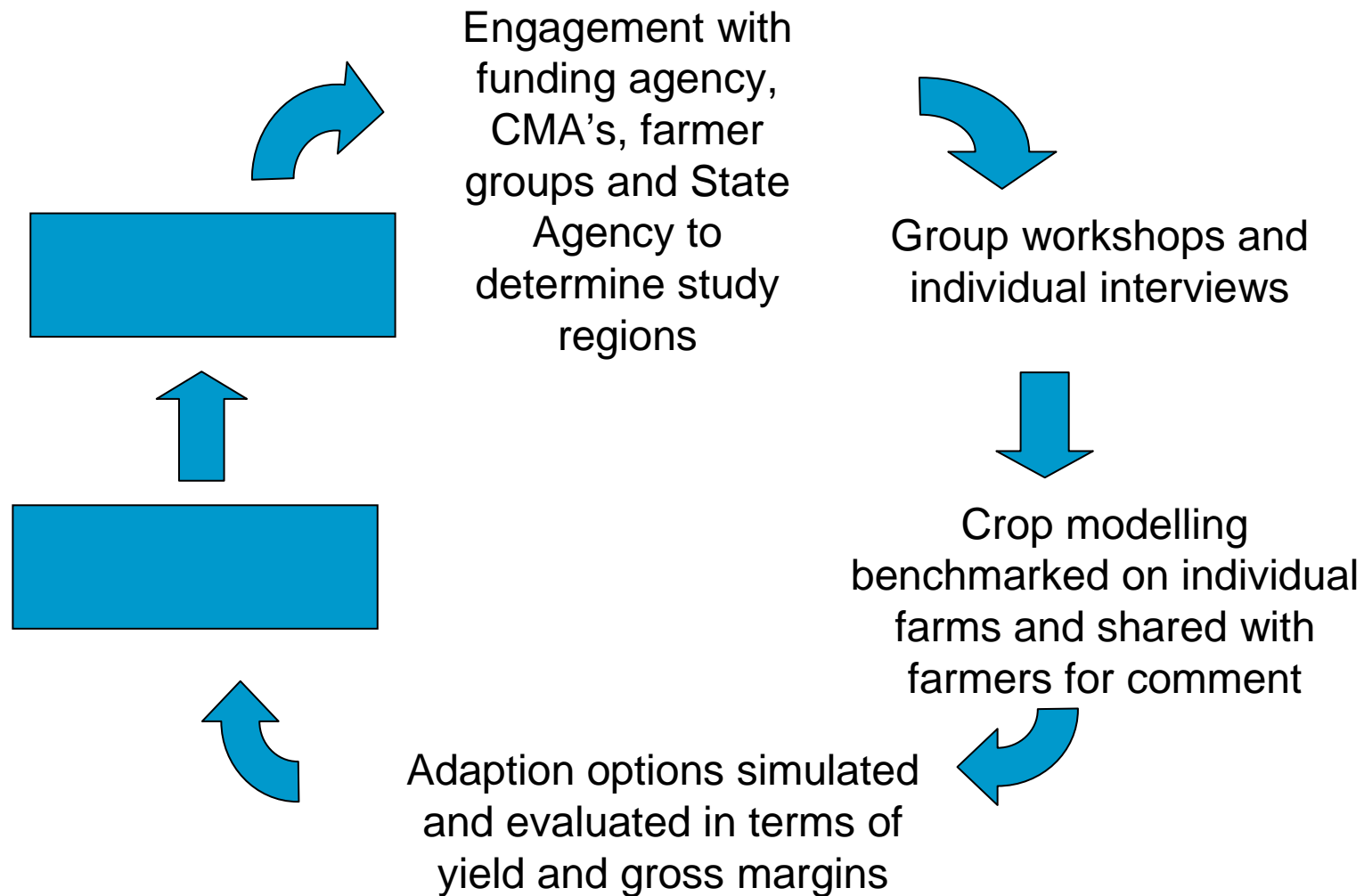


# Benchmarking

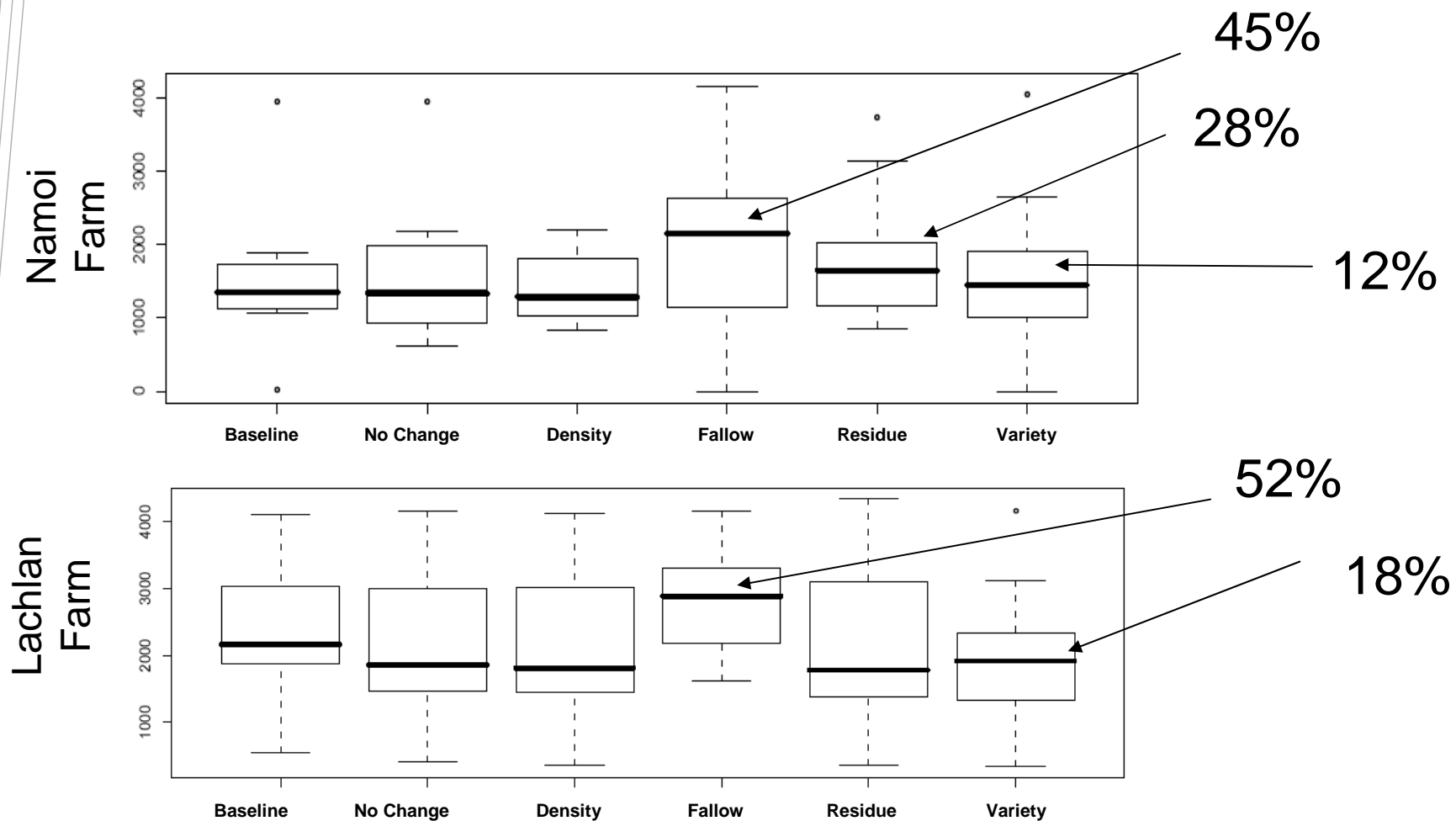


- Crop rotations, sowing rates, fertiliser inputs, and management practices are checked and estimates of yield produced
- Farmers shown estimated yield information in a range of formats

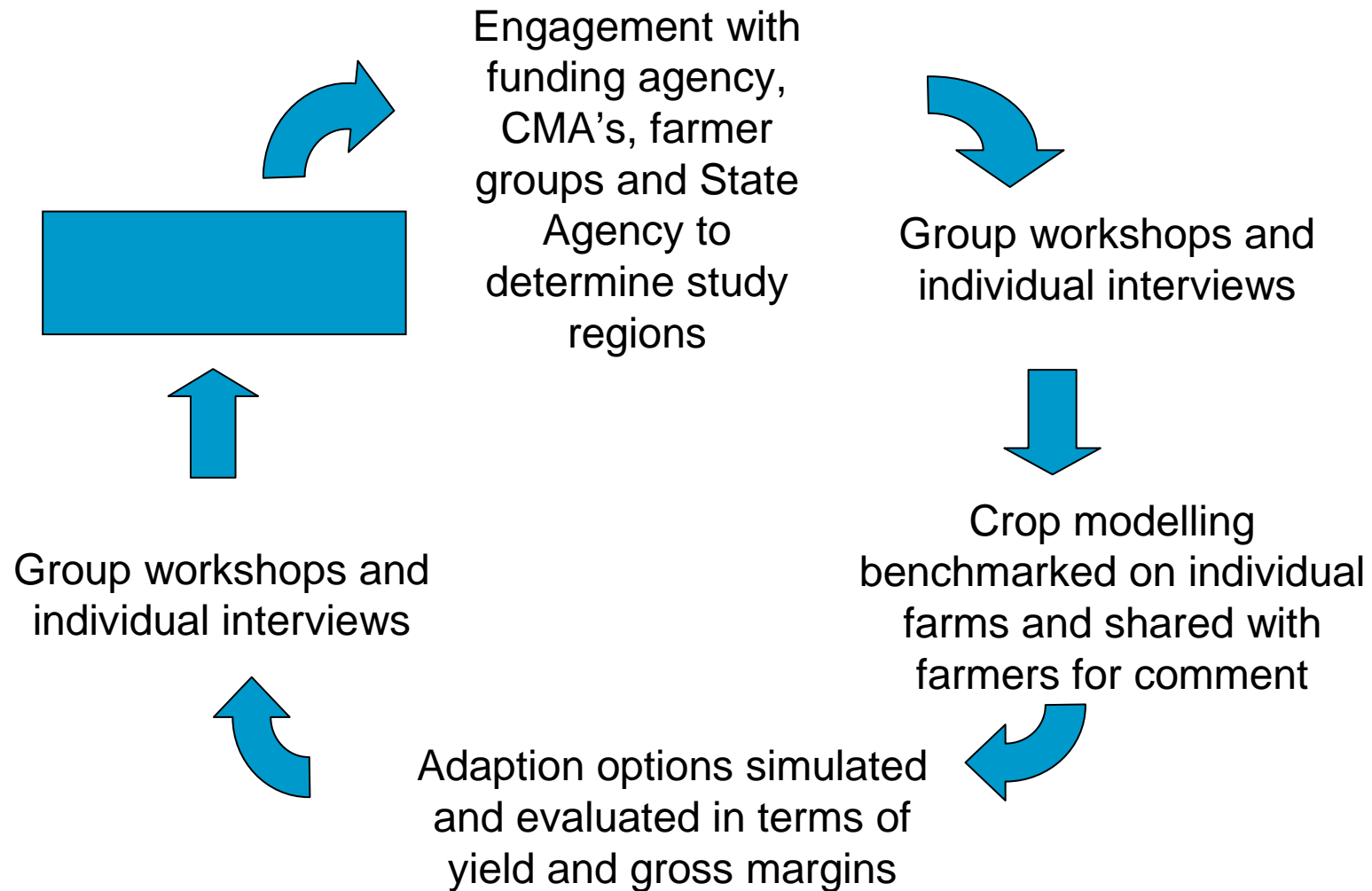
# Engagement Process



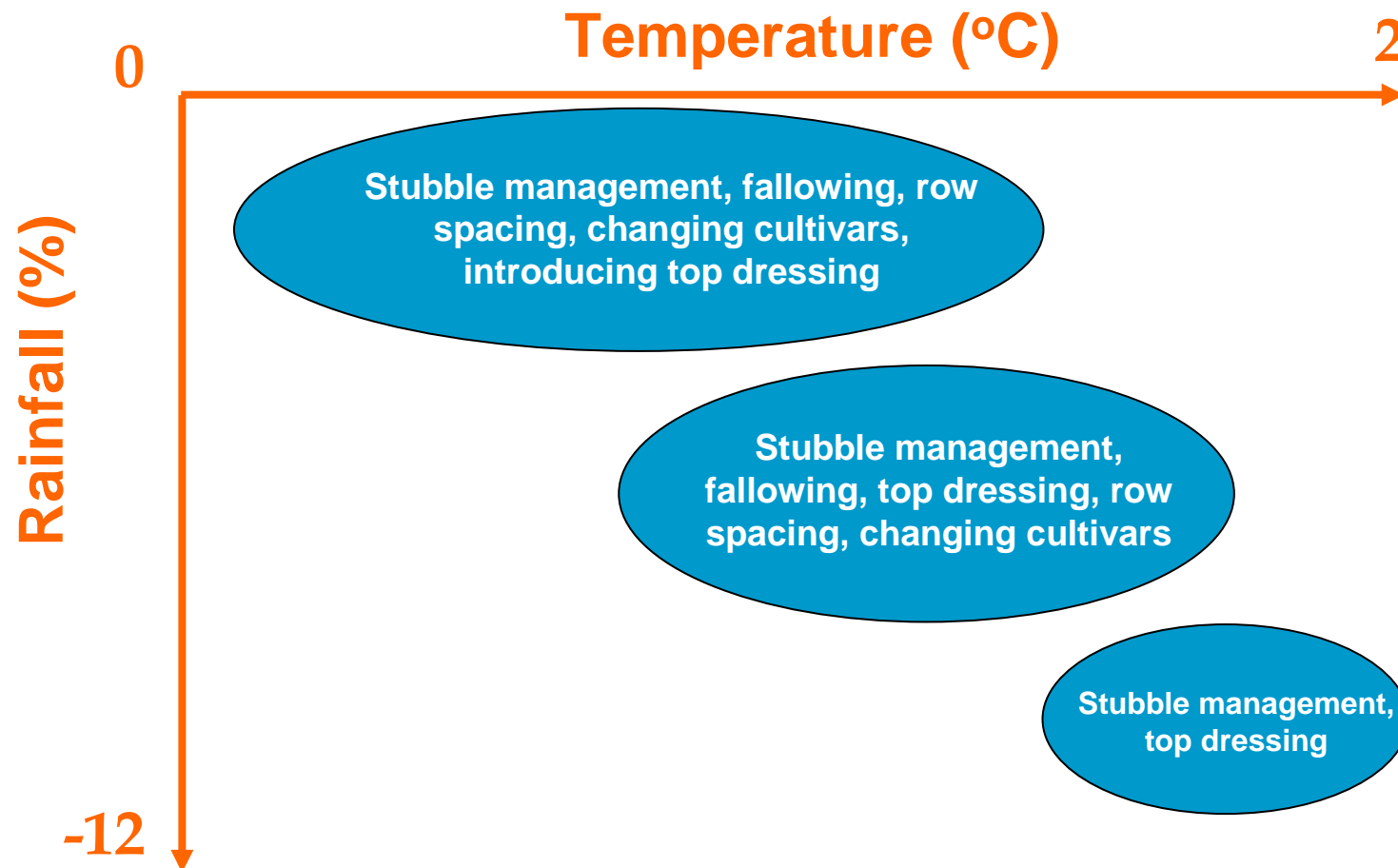
# Testing adaptation options



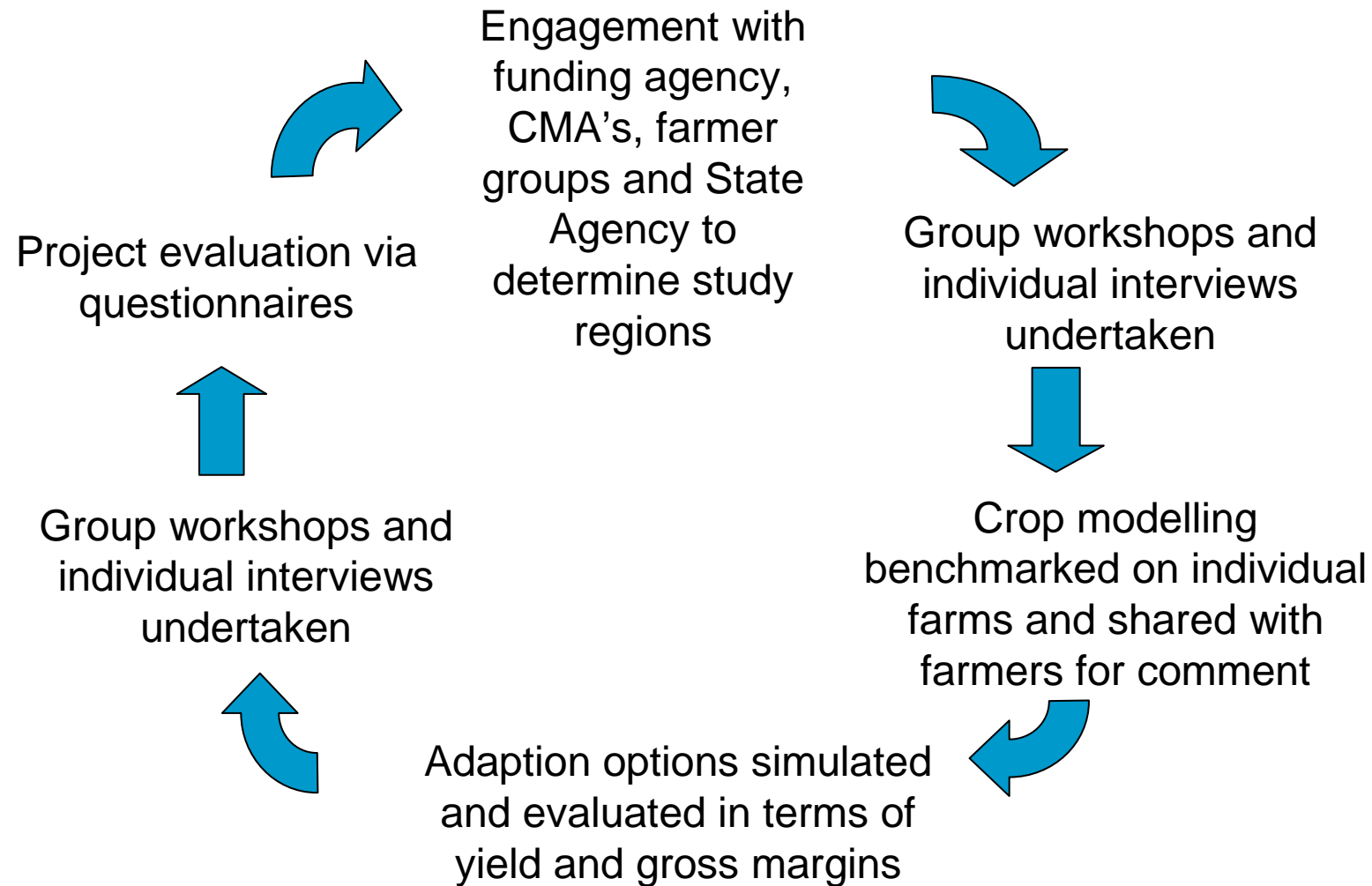
# Engagement Process



# Group workshops and Individual interviews



# Engagement Process



# Conclusions

- Our research has shown that local expert knowledge and modelling can be combined to examine the value of adaptation from local to regional scales.
- The regional variability of adaptation results shows clearly that local knowledge will be required to adapt to projected changes and hence combining local expert knowledge and modelling is a crucial activity.
- The prospect of adapting to significant climate change remains challenging, and achieving doubled yield production within 40 years would seem remote with significantly new and innovative adaptation.



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# Thank you

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