

Climate Smart Agriculture: Barriers to adoption

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Outline

- ▶ What is 'Climate Smart Agriculture'?
- ▶ Drivers and motivations
- ▶ This study
- ▶ Main categories of barriers identified
- ▶ Most important barriers
- ▶ Policy implications
- ▶ Conclusion

CSA definition

- Definition: 'Agriculture that sustainably increases productivity, resilience (adaptation), reduces/removes GHGs (mitigation), and enhances achievement of national food security and development goals' (FAO 2010)
- CSA is locally specific



What drives adoption?

- Insights from innovation literature, conservation agriculture, behavioural economics, psychology
- Theory of induced innovations (Hayami and Ruttan 1985)
- Innovation driven by:
 - Scarcity (Pressure)
 - Environmental Regulations
 - Economic Opportunities
- Benefits accrue differently in mitigation and adaptation

This study

- Looked at a range of literature
- Identified long list of potential barriers
- Identify the primary barriers based on strength of evidence in the literature and agreement in the literature



Groups of barriers identified

Farmer level

- Structural
- Economic
- Social and cultural
- Behavioural and cognitive

National/industry level

- Policy
- Production
- Education and information
- Leakage
- Industry cooperation
- Administrative



Most important barriers identified

Highest importance:

- Actual or perceived lack of financial benefits
- Actual or perceived loss of production (both at individual and national scales)

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- Most countries focus on efficiency gains – fewer emissions per unit product
 - Skirts around the issue of cutting emissions significantly
 - E.g. New Zealand has stated it will only introduce emissions reduction obligations if its international competitors also do so (New Zealand Government, 2014)

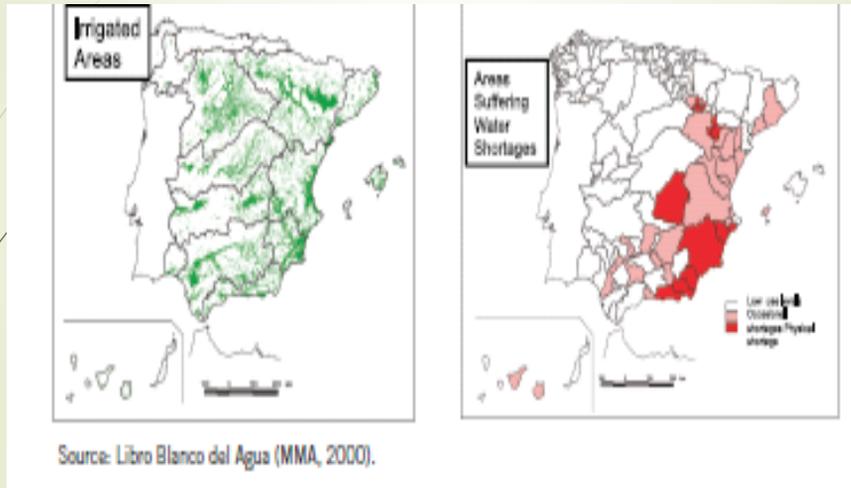
Most important barriers identified

Highest importance:

- Actual or perceived lack of financial benefits
- Actual or perceived loss of production (both at individual and national scales)
- A lack of information and education
- The absence of, and poorly designed, (climate, environment, agricultural) policy

Irrigation/Water subsidies

- Used to support **production**
e.g Spain, India
- Cost of pumps and electricity also sometimes subsidised
- Implications:
 - Mitigation: potential increased energy use
 - Adaptation: groundwater depletion in areas already water scarce & becoming more so, potentially increasing future vulnerability
 - Creating barrier to transformation
 - Also pollution, salination, biodiversity impacts



Moderate importance

- Cost of adoption
- Hidden and transactions costs
- Social and cultural factors





Less importance

- Beliefs about climate change
- Land tenure
- Complementary infrastructure
- Limited access to credit
- Administrative transaction costs
- Possible carbon leakage

- Other barriers identified but less agreement or evidence in the literature



Policy implications

1. Primary filtering for local relevance
2. Which are the most important barriers for the local conditions.
3. Identify where benefits and costs accrue (Pannell 2008)
 - ▀ Private benefits negative, public benefits positive: positive incentives
 - ▀ Private benefits slightly positive, public benefits positive: extension
 - ▀ Private benefits greater than public benefits: no action
 - ▀ Private benefits positive, public negative: regulations

Drivers of adaptation and mitigation

Driver	Adaptation	Mitigation
Regulation	No direct policy but influenced by other policies	Not enforced Potential inclusion in regulation may provide some motivation for action
Scarcity/'pressure'	Yes	Not significant – perhaps fuel use
Economic opportunities	Benefits	Most accrue privately (local) Direct benefits accrue publically (global) Indirect/ancillary benefits may accrue privately (local)
	Costs	Private (usually) Private
	Timing	Many immediate Some future Direct benefits future Indirect/ancillary benefits immediate
	Certainty of effect	High uncertainty (mostly around future impacts) Direct benefits depend on global action so uncertain Permanence of measures uncertain Indirect/ancillary benefits have greater certainty