

INTRODUCTION

- Climate change and fear from irreversible environmental degradation poses major challenge to Australian Agriculture.
- Development of new agricultural industries in northern Australia is seen as a way to manage climate risks and environmental risks.
- The relocation of the rice industry to north could offset decreases in the irrigated area and output of the Murray Darling Basin (MDB) as a result of decreased inflows and buybacks of environmental water under the Murray Darling Basin Plan.

Key objective

This paper evaluates environmental and climate risks strategies employed by rice industry in Australia. In particular, the paper explores on-going structural adjustments in rice farming system and regional relocations options by considering the net effects of shifting agricultural production from southern rice areas to sugar dominated areas in northern Queensland, Australia, using dynamic regional Computable General Equilibrium (CGE) model.

METHODOLOGY

ACIL Tasman's CGE model, *Tasman Global*, was used to estimate the regional level economic impacts of the different scenarios. *Tasman Global* is an iterative dynamic CGE model that estimates relationships between variables at different points in time

For this analysis the model has been aggregated to:

- Four levels, namely the Southern Rice region, the Burdekin local government area (LGA), the Rest of Australia and the Total Australia.
- Thirty-four industries/commodities to provide the maximum detail possible for the key industries related to this analysis

The impact of rice relocation is measured in terms of GDP. However, to reduce potential confusion between with the various acronyms (e.g., GRP and GSP), the term 'economic output' has been used in the discussion of the results presented in this here.

Rice relocation scenarios

Two scenarios were developed based on the discussions with the rice industry, climate change trends and governments' water policies

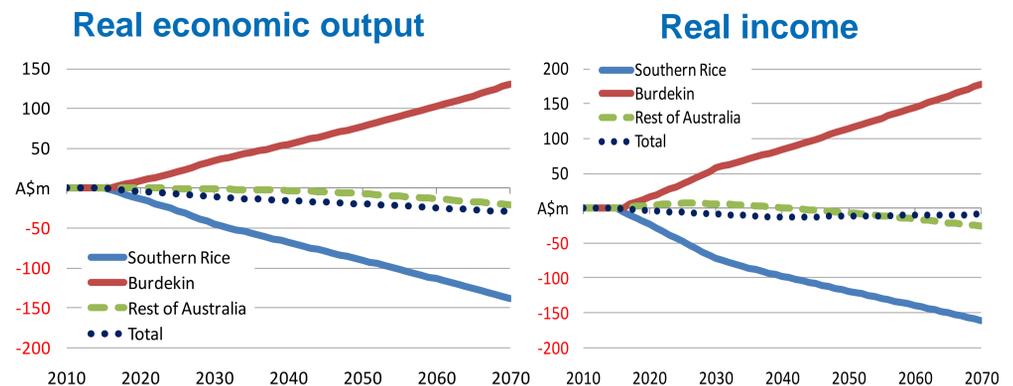
Baseline scenario: No reduction in rice production and water availability.

Scenario 1: There is a reduction in water availability and rice area in the southern area and some rice is grown in the Burdekin on fallow sugarcane land without competition with sugarcane.

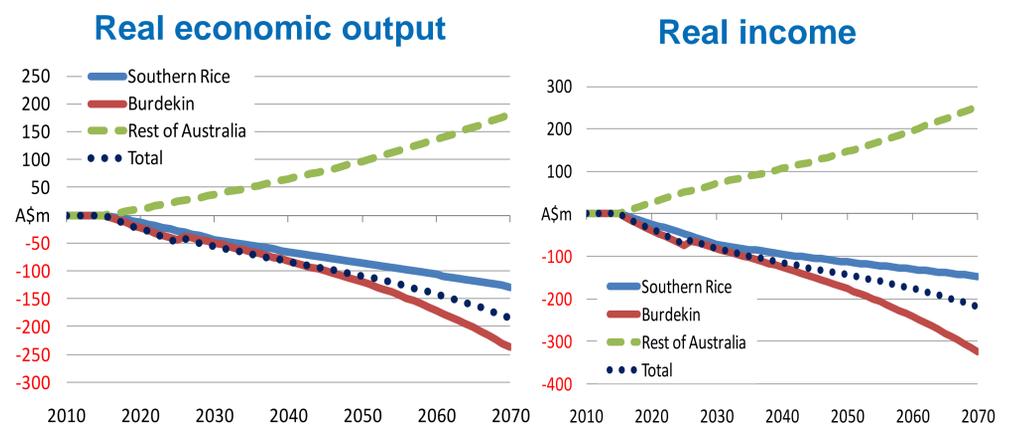
Scenario 2: As above, but rice displaces sugarcane, rather than using fallow land.

RESULTS AND DISCUSSION

Macroeconomic Impact: Scenario 1



Macroeconomic Impact: Scenario 2



CONCLUSIONS AND IMPLICATION

- Regional relocation scenarios demonstrate net reduction in real economic output and real income, although a rice-sugarcane rotation in the northern Queensland partly offsets some of the negative impact
- There is unlikely to be a rapid and spontaneous increase in rice production in the north, because of a lack of infrastructure, wariness in relation to the agronomic issues and the opportunity cost of turning away from sugar
- There would be no point in buying back 'environmental' water in the south, only to incur additional environmental costs in the north
- Strong government support would be crucial to implement such relocation to achieve desirable social, economic and environmental outcomes

