Understanding the community level effects of water reform in the Murray-Darling Basin

Dr Jeremy Cheesman,
Principal, Marsden Jacob Associates

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National Centre for Epidemiology and Population Health

and expert advisors
Outline

- Economic and social profiles and impact assessments in the Murray-Darling Basin:
  - Rationale;
  - Objectives;
  - Context;
  - Framework and approach;
  - Results;
  - Value of the assessment to the water reform process

- Assessment of local community impacts of proposals for the Murray-Darling Basin Plan
  - Objectives;
  - Context;
  - Approach;
  - Value of the assessment to the water reform process.
Economic and social profiles and impact assessments in the Murray-Darling Basin
MJA consortium

- Marsden Jacob Associates (MJA)
- RM Consulting Group (RMCG)
- Environment & Behaviour Consultants (EBC)
- ANU, National Centre for Epidemiology and Population Health
- Tim Cummins and Associates
- Geoff McLeod
Rationale

- The Stakeholder Engagement Strategy of the MDBA aims to create opportunities for people to provide input into the Basin Plan’s development.
- Hearing and understanding community views of potential impacts of Basin Plan is of fundamental importance.
- Understanding regional differences and factors driving these differences is a key step to developing effective evidence based policy.
- MDBA commissioned multiple lines of inquiry to inform the assessment of social and economic impacts. This work triangulates, is directly complementary, and none of the analyses are substitutable.
- Response to the Basin Plan may not mirror drought response. Responses may be non-linear and non-marginal.
Objectives

Authority sought services to:

- Complete profiles and situation analyses, including of strengths and weaknesses, of regional and selected local Basin communities;
- Undertake assessments of the likely economic impacts (positive and negative) of changes in water availability on selected regional or local communities and industries in the Basin;
- Undertake assessments of the likely social and cultural impacts (positive and negative) of changes in water availability on selected regional or local communities and industries in the Basin; and
- Consult extensively with regional communities in undertaking the above.

- Delivered on a strict and tight deadline (January-late April 2010)
Context

- MDB reform initiated and accelerated during one of the worst drought sequences on record.
- Agricultural terms of trade flat, productivity slowing, appreciating dollar, low interest rates, aging farmer population, shift from the family farm to new models, ‘average’ farms returns have been unsustainable.
- Scarce water has found its way to higher water value agricultural goods, and GVIAP/ML increased for higher water value commodities.
- Irrigators in the Basin have invested in irrigation technology more than outside the Basin.
- Markets are becoming increasingly efficient at price signalling, and the real value of water has increased.
- Buybacks have been an enabler of adaptation, but community sentiment mixed and a source of social tension.
- Rural communities appear remarkably resilient, but drought has taken a significant toll. This toll is not evidenced in ABS statistics. Policy fatigue is evident.
Organising framework

Exposure  
Sensitivity

Potential impact  
Adaptive capacity

Vulnerability

Regions

- 18 Sustainable Yield Regions
- 14 irrigation regions
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Evaluation process

Pre-consultation consultations
ABS
ABARE
BRS
CSIRO

Regional context Profiles
- Resource context
- The region’s community
- The regional economy
- WRM context

Vulnerability profiles
- Regional water dependence
- Community dependence on water
- Social resilience to change in water allocation

Adaptation Pathways
- Supply reliability thresholds and responses
- Constraints
- Adaptation assistance
- Regional examples of adaptation

Regional water supply scenarios

18 sustainable yield regions
- None

14 target regions
- Draft community profiles provide the reference basis for 200+ structured key informant interviews in 14 regions.
- 1,200 surveys of Basin households. To include communities, irrigators, and businesses. Surveys provide insight about five capitals, regional values and preferences, and how irrigators would respond to changed water allocations caused by SDLs

Regional consultations
- Draft community profiles

Report
- Sustainable yield region profiles and cursory impact assessment
- Detailed regional profiles for 11 regions
- Synthesis report on socioeconomic impact assessment of SDL options
Evaluation mechanics

- 1,000 + household surveys – irrigation, community, business.
- 200 + face to face interviews with key informants.
- Explored:
  - Regional issues;
  - Regional capacity and capitals (human, social, financial, natural, built);
  - Drought shadow and response;
  - Bridging the gap.
- Scenarios
  - 20, 40, 60 percent reduction on long term cap equivalent (LTCE) allocations, calibrated to 1996 -
  - No compensation, and no transitional support;
  - Allowed exploration of response elasticities and non-linearities.
Headline results

- Consistent with results of other assessments and drought experience.
- Short run responses more ‘elastic’.
- Responses informed by expert judgement and statistical analyses, cross checked for internal consistency.

Index of water consumption, by agricultural commodity - Murray-Darling Basin – 2000-01 to 2008-09

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Sensitivity pathways

Notes
GVIAP: Gross Value of Irrigated Agricultural Product ($)
GVAP: Gross Value of Agricultural Product ($)
IA: Irrigated agriculture

Regional economy irrigated agriculture dependence

Human and social capital

Farm financial situation
Farmer wellbeing and optimism
Farmer age

Farmer and farm sector

Agricultural economy irrigated agriculture dependence

GVIAP / GRP

Employ IA / Total employ

Index of education and occupation
Index of economic resources
Index of Advantage and Disadvantage

% farm set up for irrigation
% operating costs irrigation water
% assets = water
Security of water entitlements
‘Fixity vs. flexibility’ of natural and physical capital

Security of water entitlements
Farm sensitivity

Correlates of sensitivity (change operations or seek to exit)

- Increasing farm sector water dependency;
- Increasing farm sector financial stress;
- Decreasing personal wellbeing and optimism; and
- Middle aged farmers.

Substitution strategies consistent with expectations.
Sector sensitivity – views on thresholds

- **Cotton** would be proportionately affected by reduced water availability. Potential for significant socio-economic flow-on impacts to remote cotton-dependent towns. View is that beyond 40% reductions cotton production and processing capacity would contract markedly;

- **Rice** production to decline at a greater rate than the respective decline in water availability. View is that at around 40% water availability reduction rice production in southern to central NSW would be undermined, and at 60% water availability reduction the rice sector largely would largely cease to operate;

- **Dairy** is partially insulated with NVIRP recovering equivalent to a 20% reduction in long-term water availability. View is that reductions greater than this would cause an appreciable decline and a loss of confidence;

- **Horticulture** will be able to buy water on the market to make up for water availability shortfalls, or continue operation using very small relative volumes of High Security entitlements (NSW). Water availability reductions of 40% or more were viewed as a key threshold.
Regional sensitivity

- Sensitivity tied to responses of producing sectors;
- Deflating local economies if irrigation intensity falls or dryland conversion occurs;
- Diversity of economic base correlates with size;
- Size of economy correlates with other social indicators;
- Social capital plays a key role;
- People may be tied to regions (and will continue to be) for non-economic reasons.
Informing MDB water policy

At a minimum, provides:

- confirms reality of local social and economic impacts;
- shows the significant community uncertainty;
- shows a need to reconcile short run local and longer run aggregate assessments;
- insights into regional communities, issues, drivers, values and differences;
- basis to facilitate discussions with Basin communities in the future;
- movement towards understanding the ‘stock’ issues, as well as the ‘flow’ issues;
- to revisit the socioeconomic implications of the Basin Plan in five years time.
Assessment of local community impacts of proposals for the Murray-Darling Basin Plan
EBC consortium

- Environment & Behaviour Consultants (EBC)
  - Social impact assessment
- Marsden Jacob Associates (MJA)
  - Economic assessment, consultation
- RM Consulting Group (RMCG)
  - Project management, water planning, consultation
- EconSearch Pty Ltd
  - Economic assessment, consultation
- Tim Cummins and Associates
  - Consultation, local knowledge
- Geoff McLeod
  - Consultation, local knowledge
Objectives

- This project has a focus on the local community scale
  - Direct effects on agricultural production and other industries in the Basin;
  - Indirect or flow-on effects on other industries and business activities in the Basin...and link to community issues;
  - Human costs and benefits, including in relation to mental health;
  - Wider social and cultural implications;
  - Financial implications;
  - Mitigation strategies including the capacity of communities to adapt.
- Authority seeks advice on short, medium and long term impacts.
- Local implications of the Guide to the proposed Basin Plan within the Basin’s 19 regions.
- Clear signals from the Authority that this is a community engagement and social impact assessment, with economic analysis complementing.
- Strict and tight timelines – now through March 15.
Context

- Recovery via buybacks and infrastructure investment.
- Irrigators who choose to hold entitlements face no direct reduction in their allocations, but uncertainty via:
  - reduced consumptive pool of entitlements;
  - reduced seasonal allocation pool (temporary market);
  - variable carryover rules and uncertain Commonwealth action.
- Net and gross reductions - where and when
  - Percentage reductions to purchasable water
  - Bridging the gap, need to identify
    - Buyback targets and water use efficiency programs by region;
    - Likely sellers.
- Key lies in the dynamics of the transition phase – structural adjustment with real friction and constraints in communities.
Framing the assessment - social catchments

- **Baseline:**
  - Characteristics of irrigators & communities

- **Change:**
  - Net change in water entitlements (SDLs, buyback, efficiencies)

- **Impact:**
  - Irrigator and community substitution and adjustment effects

- **Flow on effects to communities**
  - Expenditure and employment
  - Local businesses and services
  - Health, well being, population
Consultation

- Targeted within 19 regions
  - Ground-truthing and adding value to quantitative information
  - New information gathering (history of change) tracing and evidencing at the community level – shops, professionals, school kids, services, processors and suppliers.

- Allocation of consultation time proportionate to:
  - SDLs
  - Exposure and impacts

- Farmers, processors, community (businesses, Local Government, other) – targeted key informants
Economic work components

- Multiple lines of inquiry converging to a rigorous understanding, supporting and framing the social impact assessments.
- Analyses to inform the consultations, and the final project outputs:
  - ‘Slowing down’ the ABARE CGE model:
    - sticky labor and capital;
    - accelerated depreciation;
    - shorten the timeframe of analysis.
  - Spatial modelling of farm expenditure;
  - Regional profiling / indicators analyses;
  - Farm budget and asset valuation analyses;
  - Minimum scale of production analysis (indirect and flow on impacts).
  - Regional case study analyses.
Value to policy

- understanding at the community level pressures, concerns, issues, drivers and facilitators of change and adjustment;
- reconciling with other assessments and modelling;
- providing informed judgment of impacts and developing targeted policy;
- creating a platform for future dialogue with communities.
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Assets and equity

Value of farm assets (Mean and SE Mean)

Value of water assets (Mean and SE Mean)
Farmer age, optimism, wellbeing

The normative range for Deakin wellbeing is between 73 and 76.