Socio-economic Indicators for Cotton Communities

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Indicators for cotton communities

One thing that distinguishes the cotton industry from other farming industries is the unusual strength of the connections it has with its nearby rural communities. Changes in the industry are an important source of change in communities where it operates. Similarly, communities in cotton regions change in response to the more general forces acting on rural Australia, and this in turn can affect the performance of the industry and the wellbeing of its people. The industry recognises these 'shared fates', which explains the Community Program of the Cotton Catchment Communities CRC, which funded the work on which this paper is based[1]. The Program aims to provide knowledge and guidance to the industry, its communities and policy makers, to better manage the relationships between them.

Our work focused on selecting a 'baseline' set of socio-economic indicators that could be used to track the economic and social condition of cotton communities over the life of the CRC and beyond. These could have a variety of uses, including:

- helping the industry to monitor and understand its influence on its communities;
- helping communities monitor and understand their influence on the industry; and
- helping both industry and community manage their changes and interactions.

Indicators are data that describe the condition of a system; in this case, the key social and economic conditions in communities serving the cotton industry. The interpretation of indicators depends on understanding how the system works. For example, a person's age, weight, blood pressure, cholesterol and blood sugar levels are partial indicators of their health status. Their interpretation is based on the theory of how the indicators are linked, via cause and effect, to health outcomes such as cardio-vascular risk. Since theories are subject to continual testing and refinement, the relevant indicators may be redefined over time. Communities are complex socio-economic systems, and the interpretation of indicators of their socio-economic condition depends on an understanding of the causes and consequences of community wellbeing. Therefore, the indicators proposed here will need to be refined as we learn more about how they reflect the condition of the industry and its communities. As baseline indicators, they are not intended to track all the significant or relevant changes; others will be added over time, as new technologies, unforseen events and so on emerge.

There is no single or 'standard' set of socio-economic indicators of rural community wellbeing. Although social scientists and community development practitioners generally agree on the broad categories of things that are useful to monitor, indicators will be chosen to balance the need to track the issues and circumstances of particular communities, while allowing useful comparisons with both similar communities (in this case, cotton communities) and rural communities in general.

[1] In collaboration with Russell Gorddard and Tom Measham (CSIRO Sustainable Ecosystems) and Bob Farquharson (NSW Department of Primary Industries).

Findings from our work on cotton communities

The method we chose for selecting indicators is based on the *sustainable livelihoods* framework (Scoones, 1998). This builds on an approach developed by several writers, and has proven useful in understanding social and economic dimensions of agricultural landscapes around the world.

Consultations were conducted in the five communities where Local Government Authorities (LGAs) provided financial support for the CRC: Milmerran, Inverell, Narrabri, Narromine and Warren. We concentrated on Narrabri, Narromine and Warren, where we identified and prioritised the industry-related issues of concern to the communities. Three focus groups were held in Narrabri in September 2005 involving a total of 23 participants, with representatives from eight industry and community organizations.

Narrabri was selected for testing a method of mapping the issues in the communities. The information collected in focus groups was used to construct a conceptual map, linking the key issues, the factors influencing them, and the possible relationships between them. The method allowed the identification of twelve key indicators in Narrabri. Eight of these are now discussed.

1. Area of cotton planted, by locality and type of cotton.

While not strictly a socio-economic variable, area of cotton planted may be the best single indicator of the potential impact of the industry on the socio-economic condition of communities in the region in any year. Year-to-year changes in area planted will not be equally felt, however, in all three towns in Narrabri LGA. As well, cotton production in adjacent LGAs generates socio-economic effects in Narrabri. Hence, we need to know the extent of economic and social linkages that cotton growers in Narrabri and adjacent LGAs have with each of the towns in the region. Cotton growers typically have links with several communities, including some well outside the region. The proportion of their total business and household spending done in one or another local town, compared with the proportion spent elsewhere, is an indicator of the strength of the industry's local economic linkage. Over time, new cotton production technologies, both on-farm and in ancillary industries, change the relationships between area grown and its socio-economic impacts in communities. For example, the advent of Roundup Ready cotton has greatly reduced seasonal labour requirements, with significant effects on seasonal spending, for example in caravan parks, hotels, and supermarkets, in many communities. Annual sample surveys of cotton growers would be needed to determine spending patterns and track changes in them resulting from technological innovations.

2. Demographic diversity of residents

The demographic diversity of the Narrabri community, compared with other rural towns of its size, is a result of the diverse workforce in several research institutions in the area, and also of the relatively well-educated and high-income workforce. Such a workforce makes a significant contribution a range of sporting, social and cultural activities. Potential indicators include the percentage of the resident population born elsewhere, educational level, and the range and viability of community groups.

3. Educational choice and quality

The range and quality of schooling choices available in the community is often raised as a key influence on the attraction and retention of skilled employees in rural communities. This is likely to hold even more strongly for employees in the cotton and ancillary industries. Accordingly, indicator variables are school enrolments, retention rates for students and teachers, and the number of students travelling outside the area for higher secondary schooling.

4. Housing affordability

This can change fairly rapidly in communities experiencing growth or decline, and may be a good barometer of local economic conditions. The ABS Population Census has data on mortgage and rental payments, but for greater recency we would use Real Estate Institute data on sales prices and rentals.

5. Population change

Population change is perhaps the most widely-used indicator of changing community condition. Simple counts of total population are not as meaningful as changes in particular segments of the population, such as the age and sex distribution of the population. The population aged either 14 and under or 65 and over should be tracked, as well as the dependency ratio (15 and under and over 64, as a percentage of those 15 to 64). Census data, supplemented by inter-censal estimates, surveys of school leavers, and staff turnover at major employers will provide the data.

6. Local business mix

In smaller places such as Narromine and Warren it would be possible to do an inventory of all businesses, by type, and to track their changing levels of activity and employment by annual survey. ABS Population Census also provides data on employment by industry, but only at 5-yearly intervals.

7. Demand for skilled labour

The difficulty of attracting and retaining skilled labour was a key issue raised in all communities where consultations took place. Employment agency data, and surveys of major employers, could provide such data.

8. Unemployment

Unemployment by age, sex, occupation and skill level are key socio-economic indicators. Census data, supplemented by quarterly Centrelink data, would track this.

The Macquarie Valley cotton communities

The communities of Warren and Narromine were also visited, and consultations conducted with staff of the two LGAs, cotton industry stakeholders (growers and ancillary industries), and local business people.

The issues raised were different between Warren and Narromine. In Warren, reduced areas planted owing to very low allocations of surface water in recent years, and the absence of groundwater,

coupled with the advent of Roundup Ready cotton, has led to a large reduction in economic flows through the town. Of particular importance has been the large reduction in demand for seasonal labour, reducing the household income of local residents who relied on such work. It was claimed that he loss of this supplementary income led to an increa se in the incidence of depression and its effects. This suggests that an important indicator to track would be the reporting of depression and related problems, through community health and other statistics such as prescriptions for anti-depressive drugs. The lack of seasonal work has also had an effect on businesses that cater for itinerant workers, such as caravan parks and hotels. Annual surveys of selected businesses could provide data for an indicator of this influence.

In Narromine, by contrast, the availability of some groundwater, the lower relative share of cotton in total agricultural production, and the proximity of the expanding regional centre of Dubbo, have reduced the effects of reduced surface water allocations. Indeed, informants in Narromine reported strong economic growth and residential building activity over the past two years. Our inspections of the business and industrial areas of the two towns, noting recently closed and opened businesses, new building activity, and apparent business expansion, tended to confirm these reports.

Measuring the socio-economic wellbeing of cotton communities

The ABS Censuses of Population and Housing, held every five years, generate a vast array of high quality data that could be used for constructing for potential indicators. Examples of indicators that can be derived from ABS Census data are shown in Table 1 (Reeve et al., 2003). Because ABS Census data are available only every five years, other sources must be found for indicators that track year-to-year changes.

While socio-economic indicators can be selected by identifying issues specific to individual communities (as above), it can also be argued that the indicators should cover the four forms of *capital* whose maintenance and growth are necessary for the sustainability of wellbeing in any community. Examples of such indicators for cotton communities that could be updated annually from local data, using the 'four capitals' framework, are the following.

Built Capital: *the built environment and anything else that has been made by humans, whether in private or public ownership; it includes the physical assets of businesses and households, public physical infrastructure such as roads, buildings, and other facilities*. Examples:

- Total value of Building Approvals passed by Council, and completed, by category (residential, other)
- Council capital works and maintenance budgets by category (roads, other)
- Capital works and maintenance budgets of major public and non-profit sector agencies (schools, hospitals, recreational groups).
- Business establishments and closures
- Private business investment in built capital (collected by annual survey), especially cotton growers and ancillary industries.

Human Capital: *the knowledge, skills, and general capacities of individuals*. Examples:

- Enrolments at schools and other educational institutions in the region
- Employee turnover: origin/destination of changes in employment, by skill level, at major employers in the region (council, medical facilities, schools, major private sector employers).
- Destination of school leavers (to local employment and unemployment, to further education, to employment elsewhere).
- Numbers of pension and benefit recipients, by category.

Social Capital: '*features of social organisation, such as networks, norms, and trust, that facilitate coordination and cooperation for mutual benefit.*' Examples:

- The success of key community-specific events that demonstrate the engagement of the cotton industry in the community; e.g., Cotton Cup at Warren.
- Membership in and activity of key community groups, such as Chamber of Commerce, sporting clubs, school P & Cs.
- Incidence of crime (high rates indicate lack of 'social cohesion').

Natural Capital: *the status and capacities of the bio-physical systems of a region or community, whether or not they have been modified by people, such as forests, agricultural land, and river systems*. While not within the scope of this study, broad indicators might include:

- areas of land in specific use categories, such as private farm land (native pasture/woodland; improved pasture; dryland cropping; irrigation); areas in vulnerable ecosystem types; areas in residential and urban use.
- urban water quality.

Our work identifies key variables that affect, and are affected by, the cotton industry and its associated communities. The industry plays a dominant role in the town of Narrabri, supporting skilled employment and promoting cultural diversity by attracting researchers from other cotton growing regions. While we limited our focus to the town of Narrabri, previous research in the Namoi region (CARE & IRF, 2003) has shown that there are important differences in the socio-economic issues in, and condition of, the three towns in that region. We found similar differences between Narromine and Warren in the Macquarie Valley region.

Where to from here?

It is important for the industry to be aware of the changes that are occurring in the communities that are associated with it, to understand the extent to which the industry itself is responsible for these changes, in order to manage these impacts better. Similarly, it is also important for the industry to understand how rural communities in general are changing, in order to be able to anticipate and manage the effects of changes originating outside the industry.

It was evident from our work that cotton communities face challenging issues in several ways. The issues are complex; for example, a region may experience a skilled labour shortage at the same time as unemployment. Some of these issues relate to the specific nature of the cotton industry.

Other issues are similar to the challenges facing much of rural Australia, including maintaining educational quality and choice, attracting and retaining skilled employees, providing for an increasing range and sophistication of social and environmental amenity for the sort of skilled employees it needs to attract, and retaining sufficient population to ensure that important community functions remain viable.

While it was possible to identify a number of specific factors that are changing the economic and social conditions of cotton communities, and thus to identify a large number of indicators that could be tracked in order to monitor these changes, our work was only a *scoping* study, and focused on the selection of *baseline* indicators: a limited set of variables that give an overall impression of the socio-economic condition of cotton communities. Issue-specific indicators will need to be added to be track the changing relationships between specific sources of impacts and their effects in the industry and community.

Future work might focus on extending the methods used here to all cotton communities, and continuing annual collections of the key indicators. This will allow comparisons between all cotton communities, over time, and the analysis of the reasons for differences. Comparisons with rural communities comparable in other ways but not associated with the cotton industry will throw some light on the specific contribution of the cotton industry.

It might also be worth considering whether research projects on new technologies that have the potential to result in significant changes to the economic and social structure of the industry and its communities might be required to identify these impacts, and for the industry to fund research on the socio-economic impacts of particular technologies. This would allow these impacts to be monitored, documented and better managed.

References

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Table 1. Macquarie Valley

Basic socio-economic profile indicators for Macquarie Valley cotton communities.

Profile Indicators	LGAs			
	Narromine	Warren		
Value of cotton as % of agricultural production, 1997	26.1%	49.7%		
Population 1991	6,697	3,595		
Population 1996	6,523	3,290		
Population 2001	6,621	3,155		
% change 1991-1996	-2.6	-8.5		
% change 1996-2001	1.5	-4.1		
Demographics				
% aged 14 and below	24.6	23.1		
% 15-64	62.5	65.8		
% 65 +	12.9	11.1		
Dependency ratio (a)	60.0	51.9		
% Aboriginal or TSI	14.5	11.8		
Labour force				
Unemployment rate (%)	8.5	7.2		
Unemployment rate 15-19 (%)	26.7	14.5		
Unemployment rate males 20-44 (%)	9.0	7.7		
Participation rate	62.7	69.8		
% labourer and related workers	13.9	15.6		
% employed in agriculture, forestry, fishing & services to agriculture	34.0	45.0		
Education				
% left school year 10 or less (b)	58.2	56.9		
% left school year 9 or less (b)	24.8	23.7		
% with no qualifications	63.9	65.9		
Social				
% families with weekly income <$300	5.2	4.9		
% rental housing	25.8	28.6		
% fully owned housing	44.2	43.0		
% households with no vehicle	9.2	9.2		
% separated or divorced	11.1	8.9		
% single parent families	15.6	12.4		
	Towns			
	Narromine	Warren	Trangie	Dubbo
Population 1991	3,378	2,036	991	28,064
Population 1996	3,486	1,909	951	30,102
Population 2001	3,548	1,786	940	30,937
% change 1991-1996	3.2	-6.2	-4.0	7.3
% change 1996-2001	1.8	-6.4	-1.2	2.8

(a) Population aged under 15 or 65 and over, as a percentage of those aged 15 to 64.
(b) Includes those who never went to school.