

Building and maintaining community trust in Australia's primary industries: Background literature review

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Executive summary

Australia's primary industries share common risks relating to declining community trust. Decreasing trust can lead to increased regulation, limited market access, disincentives to invest in infrastructure, and reduced industry productivity, profitability, and sustainability. Australia's RDCs have identified community trust as an essential area for collective investment and research capacity building.

This Background Literature Review outlines the evidence that formed the basis of the Research Program Investment Plan. We undertook an extensive review of Australian and relevant international scholarly and industry literature on the food and fibre industries to assess existing knowledge about building and maintaining community trust. We identified significant research gaps that must be addressed before effective intervention strategies can be developed.

The Review found existing research on community trust in Australia's primary industries to be surprisingly limited and remarkably siloed. Existing research focuses disproportionately on agriculture, rather than on the broader food and fibre industries, and it tends to examine industries or issues individually, rather considering cross-sectoral challenges or themes. Scholarly and industry research also tends to rely on quantitative methods such as surveys, rather than on qualitative approaches that enable deeper investigation of key issues.

As a result, while there have been some efforts to understand issues of importance to the Australian community (i.e., what the community cares about), there has been surprisingly little investigation of why or how these issues become important. Focus on the why and the how is essential for developing cross-sector and whole-of-system strategies that can address specific issues where trust is currently fragile and enable proactive approaches for maintaining trust as new issues emerge.

Key findings:

- Many seemingly common-sense models for the building and maintenance of community trust are ineffective for producing long-term results. They also tend to conflate trust with other related but distinct concepts such as social license, social acceptability, and confidence. Research shows that the increasing distance between producers and consumers can erode trust, but more information, education, and transparency are not the solution: instead, far more complex and nuanced approaches are needed for success.
- Existing research on community attitudes is inconsistent and sometimes contradictory in part due to an overreliance on quantitative surveys and consumer sentiment analyses in academic

and industry research; these tend to employ broad questions or overly simplistic measures that do not permit comprehensive analysis or understanding of the deeper issues affecting community trust.

- Current controversial issues—such as animal welfare, new technologies and environmental sustainability—offer critical lessons that can be applied on a cross-sectoral basis. These issues point to the complex spaces of debate that are emerging in contemporary Australia, and to the need for more robust and careful empirical research into the drivers and threats associated with community trust. It is vital to avoid easy assumptions (about the so-called urban-rural divide or the prevalence of knowledge deficits, for example) that will lead to oversimplified solutions unlikely to be successful on a medium- and longer-term basis.
- A lack of evidence base for best practices for disseminating research findings to end-users and engaging with them is a problem that is not unique to the food and fibre production sectors. However, the principles of both public engagement with research and more traditional extension approaches can be used as the basis of novel and effective dissemination and engagement strategies. Ongoing evaluation of these efforts will be crucial both to redress the limited evidence base and build capacity, and to ensure improvement and refinement of these strategies over time and guarantee that the sector benefits from investments in building and maintaining community trust.

Table of contents

EXECUTIVE SUMMARY	3
TABLE OF CONTENTS.....	5
1. INTRODUCTION.....	7
1.1. CONTEXT AND PURPOSE OF THE REVIEW	7
1.1.1. <i>Value of the food and fibre sector</i>	7
1.1.2. <i>Scoping study for building and maintaining community trust in Australia's primary industries</i>	7
1.1.3. <i>Purpose of the review</i>	8
1.2. HOW THE REVIEW WAS CONDUCTED	8
1.2.1. <i>Scholarly literature</i>	8
1.2.2. <i>'Grey' literature</i>	9
1.2.3. <i>Limits of this review</i>	9
1.3. OVERVIEW OF SOURCES REVIEWED	9
1.4 THE VALUE OF SOCIAL RESEARCH	10
2. DEFINING 'COMMUNITY TRUST'	11
2.1. INTRODUCTION.....	11
2.2. WHAT IS TRUST?	11
2.2.1. <i>Trust and transparency</i>	14
2.3 MODELS OF TRUST	15
2.3.1. <i>The Centre for Food Integrity</i>	15
2.3.2. <i>Community acceptance of mining</i>	16
2.3.3. <i>CSIRO egg industry community research</i>	16
2.4. SOCIAL LICENCE AS COMPARED TO TRUST	17
3. FOOD AND FIBRE PRODUCTION IN A CHANGING AUSTRALIA.....	20
3.1. INTRODUCTION: IS THERE AN URBAN-RURAL DIVIDE?	20
3.2. TRUST IN AUSTRALIAN FOOD AND FIBRE PRODUCTION.....	21
3.3. THE URBAN-RURAL DIVIDE AS A KNOWLEDGE GAP	22
3.4. THE PROBLEM WITH THE 'KNOWLEDGE DEFICIT' MODEL	23
3.5. ATTITUDES TO AND PERCEPTIONS OF AUSTRALIAN FOOD AND FIBRE PRODUCTION.....	24
3.6. BROAD NATIONAL AND INTERNATIONAL CHANGES ARE IMPACTING ON TRUST.....	26
3.7. CONCLUSION: TRUST IS THE BRIDGE TO THESE 'DIVIDES'	27
4. SPECIFIC DRIVERS OF COMMUNITY TRUST IN AUSTRALIAN FOOD AND FIBRE PRODUCTION	29
4.1. INTRODUCTION.....	29
4.2. MEDIA	29
4.3. RETAIL	34
4.4. CONTENTIOUS ISSUES	36
4.4.1. <i>Animal welfare</i>	36
4.4.2. <i>Agricultural technologies</i>	37
4.4.3. <i>Environmental impact and sustainability</i>	39
4.4.4. <i>Peri-urban agriculture</i>	40

5. ENGAGEMENT AND EVALUATION	42
5.1. INTRODUCTION.....	42
5.2. KEY PRINCIPLES FOR RESEARCH ENGAGEMENT.....	42
5.3 THE TRADITIONAL R, D, AND E FRAMEWORK	43
5.4. CONCLUSION	45
6. CONCLUSION AND RECOMMENDATIONS.....	46
REFERENCES.....	48

1. Introduction

1.1. Context and purpose of the review

1.1.1. Value of the food and fibre sector

Taken together, agriculture, forestry, and commercial fisheries are a vital part of the Australian economy. There are 85,861 agricultural businesses in Australia which contribute to an overall gross value of \$58.1 billion (National Farmers Federation 2017). Australia's agrifood industries utilise 405 million hectares of land (Barlow 2014) and employ approximately 300,000 people (National Farmers Federation 2017). The value of production in commercial fisheries was estimated at around \$2.5 billion in 2013–14 (Savage and Hobsbawn 2015). Forestry generates over \$20 billion worth of manufacturing sales and services domestically and it is estimated that over 70,500 Australians are employed in this sector (ABARES 2014; Commonwealth of Australia 2015). It is clear that the food and fibre sector contributes significant social and economic benefits to Australia, but changes in Australia's social, cultural, and political landscape in recent decades, increasing interest in the use of shared resources, and growing public scrutiny of various production practices leave the sector at risk of experiencing declining levels of community trust.

The terms 'industry' and 'sector' are often used to describe a collective group of organisations that operate in the same segment of the economy or share a similar business type. While these terms are often used interchangeably in relation to agriculture, fisheries, and forestry, they do have slightly different meanings. The difference is related to their scope: a 'sector' refers to a large segment of the economy, while industry refers to a much more specific group of businesses or companies. Within this review when talking about the 'sector,' we are referring to all entities involved in agriculture, fisheries, and forestry including producers, research and development corporations (RDCs), peak bodies, service providers, policymakers, agribusinesses, processors, and extension providers. When using the term 'industry,' we are referring to the smaller, individual entities in their own right (e.g., the red meat industry or the cotton industry).

1.1.2. Scoping study for building and maintaining community trust in Australia's primary industries

A number of Australian RDCs have come together to progress a collective approach to building research capability and understanding of issues associated with community trust in the primary industries. A collective approach was deemed necessary as Australia's primary industries share

common reputational risks. Erosion of community trust is thought to lead to more difficult regulatory and market environments, and may negatively impact the sector's productivity, profitability, and sustainability. Events that impact the reputation and credibility of one industry may spill over and affect the image of another industry or the sector as a whole. Previous empirical research has focused on individual issues within individual industries. However, to date, there has been limited investment in exploring issues relating to community trust on a whole-of-sector basis, nor have there been systematic efforts to develop the ability and capacity to analyse, monitor, and maintain community trust in the primary industries, both of which are key goals of the investment plan based on this literature review.

1.1.3. Purpose of the review

The purpose of this review was to identify what is already known about community trust in the primary industries, focusing on Australian-based research but scoping relevant international sources as applicable. By identifying what research work has already been completed, we were able to identify the key gaps which remain. These gaps provided the foundation for developing the research investment plan.

1.2. How the review was conducted

1.2.1. Scholarly literature

To enable the research team to gain a sound understanding of the theoretical perspectives relating to building and maintaining community trust and to ensure that everything of relevance was collected, we conducted a systematic search using scholarly databases that capture a wide range of disciplines and fields, including Scopus. Doing multiple searches using terms such as 'trust' and 'agriculture' allowed us to capture everything likely to be relevant for this plan. We also referred to the reference lists of any articles which were of particular relevance in order to capture other research conducted in similar domains, and we identified authors who have been particularly active in publishing relevant work (known as a citation-based search) in order to supplement the initial search.

1.2.2. 'Grey' literature

The term 'grey' literature refers to work that either is unpublished or is published in a non-commercial form (i.e., not available in academic journals or books). For this project, grey literature was collected via web-based searches and publicly available websites. We also contacted each of the RDCs directly for any publicly available documents to ensure that we could build a single repository for all relevant research materials including publicly available work that was not available online.

1.2.3. Limits of this review

Exclusion criteria were developed throughout the course of the research. Articles were read and deemed suitable or unsuitable based on content, methodology, and applicability to the terms of reference for the review and the research investment plan. Although focused on Australian-based literature, since there has been limited research conducted which focuses specifically on the Australian context, international literature also forms part of this review where necessary to shed light on critical issues. Although there has been work conducted exploring community attitudes to and trust within individual industries (such as forestry and fisheries), there have been limited amounts of work conducted exploring trust within the primary industries sector more broadly. Hence, this review also draws on work which has been conducted into other sectors such as mining which helped to inform the research investment plan. This review also draws only on research that is publicly available and does not include commercial-in-confidence work that may be undertaken by organisations for their own purposes.

1.3. Overview of sources reviewed

Over 150 scholarly papers were found as part of this review. Three key research groups that were identified as working in Australia on research topics directly relevant to community trust in food and fibre production are: the Food Values Research Group at the University of Adelaide; the Resources and Society Group within the CSIRO; and a group led by Prof John Coveney, Professor of Global Food, Culture and Health in the College of Nursing and Health Sciences at Flinders University.

Research relevant to this review spans a number of disciplines such as sociology and psychology and includes both quantitative and qualitative approaches. Quantitative research is typically used to investigate an issue or a problem by generating numerical or other types of data that can be transformed into usable statistics. It is used to quantify attitudes, opinions, behaviours, and other

defined variables, and to draw generalisations from a representative sample to a larger population or the population as a whole. These types of studies usually include polls and surveys or various forms. Qualitative research is usually used to gain an understanding of underlying reasons, opinions, and motivations for why people think or do what they do, and hence it allows researchers to dive more deeply into the problem or issue of interest. Common measures include focus groups, interviews, and observations, typically with a small sample size; if performed and analysed in a rigorous manner, qualitative research permits tracking of broader trends though generally cannot provide representative data. Although quantitative and qualitative methods are often used in a complementary manner, it is notable that they have been infrequently used to inform each other within the literature on community trust.

1.4 The value of social research

Although it is clear that food and fibre production occur within a social system, there are inconsistent approaches across the sector to understanding the influence of various social factors on issues of relevance. Although some industries undertake market research, it is less common to see the social research attributed the same level of importance as scientific research. Of the industries within the scope of this report, the fisheries industry appears to have taken a novel approach: investment in 'human dimensions' research for at least 10 years has seen the development of a dedicated program led by a social scientist, a social and economic research steering committee, and a strategic plan (Fisheries Research Development Corporation 2017). It is more common for industries to relegate social research into communications functions and rely on private companies for ad hoc service provision rather than incorporating the production and dissemination of this kind of knowledge into their core business. Social research can provide a range of benefits for those involved in the management of shared resources (Brooks et al. 2011) and yet the utilisation (and ongoing development) of capacity in this area appears limited compared to other sectors, for example mining (Moffat and Zhang 2014) and renewable energy (Hall 2014). It could be argued that the fisheries industry relies more on shared resources than other industries, however it is clear that the public increasingly view land-based food and fibre production in a similar way, with the environment, animals, and people being of shared concern. For some industries this sociocultural shift will require a change in industry attitudes to social research and their understandings of the social contexts in which their industries operate.

2. Defining ‘community trust’

2.1. Introduction

Community trust has become an area of increasing interest to both scholars and organisations due to indications that trust is declining in general, and in reference to specific sectors and levels of government. The Edelman Trust Barometer for 2018 (Edelman 2018) shows that Australians, along with those in many other countries, are generally distrustful of non-governmental organisations (NGOs), businesses, government, and media. In response, identifying ways of building, rebuilding, and maintaining community trust has become a priority in a number of sectors, including government, mining (Moffatt and Zhang 2014; Moffat et al. 2018; Zhang and Moffat 2015; Zhang et al. 2015), and energy production (Baumber 2018; Hall 2014). However, these efforts do not tend to draw on explicit definitions or theoretical frameworks for trust, and hence have used different implicit understandings of trust. Several have generated models or frameworks for understanding community trust in the sector of interest. In this section, we outline some key conceptual aspects of what trust is (particularly in comparison to other related ideas such as confidence) and then examine key models and frameworks that have been proposed in order to outline the central aspects of trust that warrant further examination in the context of community trust in the food and fibre industries. Our main focus is on models that have been developed in Australia, as it is important to ground these sorts of models within the same or highly similar sociocultural and economic context, although we do explore models from elsewhere when directly relevant.

2.2. What is trust?

Trust is an important concept for modern societies, particularly given division of labour. If people do not trust each other or the governmental structures that bind together society, cooperation is impossible and hence no society can survive (Brom 2000). On the surface, trust seems so fundamental to us that it seems odd or even unnecessary to ask what trust *is*, particularly as we tend to inhabit a “climate of trust” (Baier 1986). The realisation that a trust relationship exists often only becomes apparent only after the trust is broken or tested, as arguably has occurred in food and fibre production in association with various scandals and exposés. We normally expect those we trust to act according to norms and values that we share. As long as this trust is not betrayed, it will be habitual and automatic and guide our everyday practices (Bildtgaard 2008).

What happens when we trust something or someone? When we trust, we put something we care about into the hands of others, who in turn have the discretionary power to either do good and look after that thing or do harm to it. We trust others with certain sorts of tasks or roles because we cannot or do not want to take care of the thing in question ourselves, and because they have the expertise to do so: consider trusting a childcare or school (and the people within it) to look after a child. Hence there are several critical elements of trust that distinguish it from related concepts, such as confidence or acceptance. First, we become vulnerable when we trust others: we take risks, in exchange for not having to do a task or role ourselves. Part of the risk is that something may well go wrong. Second, the others who we trust have 'discretionary power': they must make choices and decisions about how to act, and we entrust them with making the right decisions for the right reasons. Another key component of trust relates to competence or expertise. As Hardin (2002) states, "to say we trust you means we believe you have the right intentions towards us *and* that you are competent to do what we trust you to do" (p. 17, italics our own). We only trust those who we think have certain abilities, and particularly are skilled in doing whatever it is that we are specifically trusting them to do. In summary, trust can be defined as "the optimistic acceptance of a vulnerable situation which is based on positive expectations of the intentions of the trusted individual or institution" (Meyer and Ward, 2009).

Hence trust is distinct from a number of closely related concepts, for instance 'reliance.' Trust and reliance both depend on people and organisations acting in predictable and consistent ways. However, in cases of reliance, we rely on others to perform particular actions, but do not really care about the reasons for them performing these actions (Makela and Townley 2013). So, for instance, we may rely on our employees to show up at work if we know that they need their jobs and not showing up will get them fired, but we may not trust them to do so. Trust on the other hand requires that we believe in the goodwill of those in whom we trust and presumes a certain alignment in our underlying values. Trust also differs from an assessment of risk, because when we trust someone or something, we do not tend to consider that the other person will deliberately let us down. We do not do a calculation or a risk/benefit analysis: we tend simply to trust (Brom 2000). Note that trust oftentimes may be reflexive and conditional, with people acting as if they trust the individual or institution upon which they depend, particularly in cases where they have no other choice or think that they have no other choice (e.g., in the case of mining, see Horowitz 2010). However, in these instances, they may continue to sceptically monitor behaviours of those who are trusted and remain prepared to withdraw their trust if necessary (Wynne 1993, p. 328), for instance if evidence should emerge that such trust is not warranted.

In the case of food and fibre production, trust is typically not shaped by direct interactions between producers and the community (Brom 2000). People no longer tend to grow their own food or fibre products but typically buy them in some sort of commercial setting. This distance from the source of production exemplifies a key conflict over trust for many in modern society. As consumers, most people purchase these products after they have passed through many stages of the value chain, each controlled by a different entity or group. Trust is extremely difficult in these settings, given the disconnect between the point of production and the point of sale. Thus while consumers might *rely* on retailers to meet their needs, they are likely aware that there have been past issues with food safety, fraud, and inaccurate labelling, among other problems. Most importantly, they may not *trust* that each organisation along the value chain has their best interests at heart, particularly larger commercial organisations associated with the negative aspects of ‘big food’ as well as grocery stores given the supermarket duopoly in Australia (Richards, Lawrence, and Burch 2011). It is worth noting that the rise in the popularity of farmers’ markets and farmgate sales (Campbell 2015) no doubt relates to a desire for trust and an understanding that having more direct contact with producers enables a more solid basis for trust.

Community trust differs from *consumer* trust but still involves key concepts such as vulnerability, discretionary power, and competence. In the case of food and fibre production, trust is not just (or primarily) related to assessments that producers will produce affordable food and fibre or safe, nutritious, and tasty food. Judgements of trust by the community rely on an underlying understanding that food and fibre producers will not harm the things that the community cares about and which producers are uniquely placed (in terms of their roles and their expertise) to care for. Resources are critical, including land and water, as are appropriate treatment of humans and animals. Responsibility for these sorts of resources and entities is of considerable interest in contemporary Australia, in part because the care of these things is *entrusted* to food and fibre producers.

Another fundamental difference between reliance and trust is the idea of ‘trustworthiness.’ Meijboom et al. (2006) provide evidence to suggest that if the food sector wishes to be trusted, it must be trustworthy. They emphasise that trustworthiness requires more than being transparent and more than simple provision of information, as information alone is neither sufficient nor necessary. In fact according to Luhmann (1979), the basic function of trust is to reduce the complexity and amount of information with which actors are confronted in problem-solving situations. Hence when we trust, we are willing to do so based on less than full information and/or on information which frequently has been considerably simplified.

Three factors which have been identified as contributing to perceived trustworthiness are *ability*, *benevolence*, and *integrity* (Mayer, Davis and Shoorman 1995; cf. Hovland, Janis and Kelley 1953)

Ability is taken to be the skills, competencies, and characteristics that enable a party to have influence within some specific domain or area of expertise; hence trust is domain-specific.

Benevolence is the extent to which a someone is perceived to want to do good in the broader sense, either for those who trust him or her or for those for whom they have responsibilities and is thus seen in a positive light. Being seen as acting from more narrow egocentric motivations, such as economic profit alone, can interfere with being viewed as benevolent, and therefore trustworthy.

Finally, *integrity* relates to the idea that the person who is trusting someone else perceives that person or entity to be adhering to a set of principles that the trustor finds acceptable. McFall (1987) emphasises that following some set principles defines personal integrity but notes that if that set of principles is not deemed acceptable by the person doing the trusting (the trustor), the other party (the trustee) would not be considered to have adequate integrity with reference to the area or issue of interest.

2.2.1. Trust and transparency

On the surface, transparency appears to be an attractive way to build and maintain trust, inasmuch as being transparent seemingly can help to show that someone has nothing to hide or that they are not lying. As Garsten and Jacobsson (2011) highlight, it would seem that the more we can see, the more that we know, and in turn this ultimately allows us to put more trust in the expertise of individuals and organisations who appear to be transparent. This equation tends to occur because the more ‘evidence’ which we can gather, the more we can verify what is occurring based on ‘facts.’ However, as they also have noted, this same sort of transparency can result in a sense of insecurity and mistrust, rather than serving to ease uncertainty and build trust, since additional information can raise further questions or allow points of debate to become visible.

Some scholars argue that transparency is key for accountability (which is again distinct from trust) and suggest that transparency is progressive because it allows society to “witness” industry practices (Barry 2013, p. 72). However, as has become clear in the context of trust in organisations, particularly in relation to disclosure of scientific information, people are more concerned with the nature and dynamics of the social relationships involved, rather than the delivery or content of the information delivered (Horowitz 2010). As emphasised by Lambek (2011), determining what it is to be ethical, or in this case trustworthy, is about paying attention to the practice and performance of relations between people, rather than on the moral codes or underlying principles which supposedly motivate right action. In other words, transparency allows the person who will do the trusting to

make his or her own judgments about the information being provided. Most importantly, information alone does not automatically result in people trusting what they see, as they may not approve of the actions or performance of the other party.

2.3 Models of trust

2.3.1. The Centre for Food Integrity

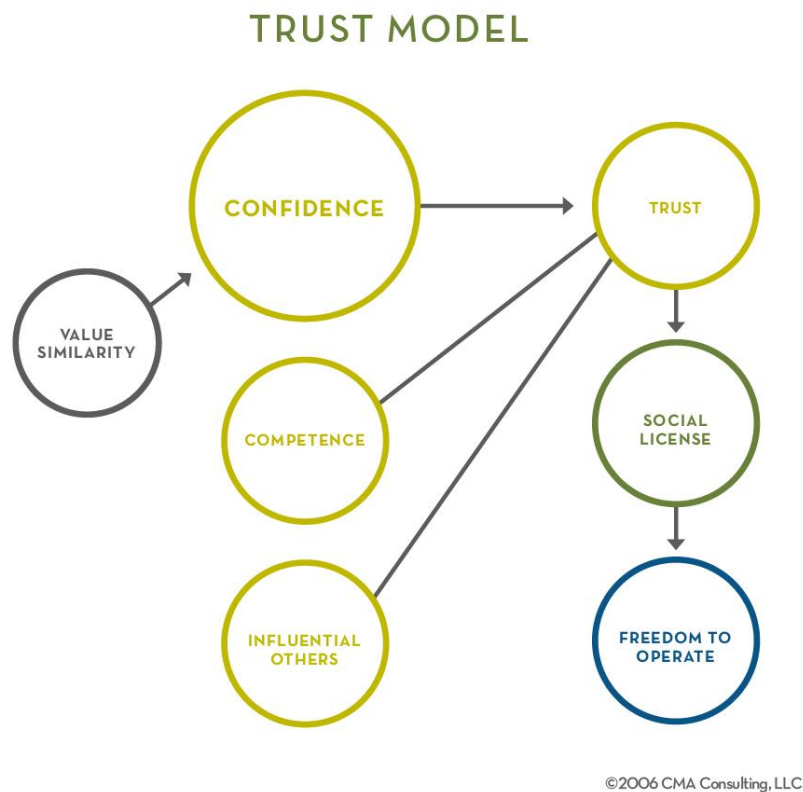


Figure 1. Trust model developed by the Centre for Food Integrity

The model for trust promoted by the U.S.-based Centre for Food Integrity (CFI) is based on the work of Sapp et al. (2009) which examined the ‘recreancy theorem’ as a model for understanding consumer trust. The recreancy theorem posits that trust involves assessment of the competence of institutional actors and the belief that they will express fiduciary responsibility (i.e., that the trustee feels an obligation to act on behalf of the trustor). Their analysis of survey results from over 2000 participants in the United States revealed that of the three primary elements that drive trust according to the theorem, confidence or shared values were much stronger drivers than competence or influential others (Sapp et al. 2009; Arnot et al. 2016). Our analysis of the trust literature suggests that confidence and shared values in fact are not equivalent or interchangeable. However this model does correctly emphasise the importance of shared values as part of the positive expectations that contribute to trust.

2.3.2. Community acceptance of mining

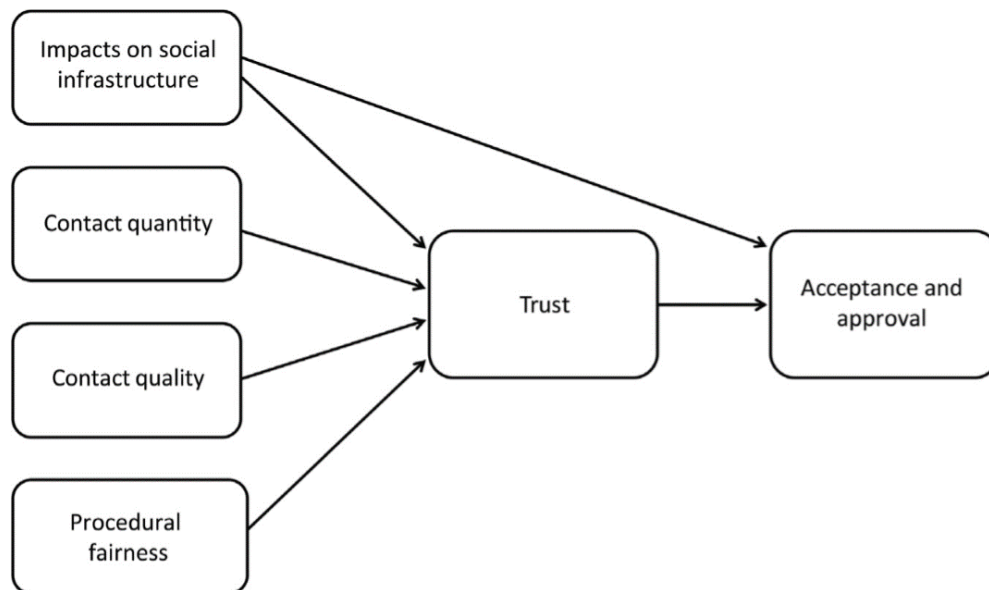


Figure 2. Trust concepts examined by Moffat and Zhang (2014) in relation to community acceptance of mining

Moffat and Zhang (2014) explore the key concepts related to trust and acceptance in communities in a region affected by coal seam gas operations in Australia in order to generate the above model. Their analysis revealed that procedural fairness was the strongest predictor of trust: “when community members reported feeling heard, listened to, and that the company would act on their concerns, their trust in the company was enhanced” (Moffat and Zhang 2014, p. 68). This concept of procedural fairness relates strongly to the idea of fiduciary responsibility outlined in Sapp et al. (2009) as well as the concept of being prepared to accept a vulnerable situation on the basis of positive expectations as outlined in Meyer and Ward (2009). However, as already described previously, direct interactions between those in the food and fibre production sector and the broader community are not common beyond the communities in which these activities take place, unlike in the context in which this model was generated, and so there is a need to explore whether these concepts are scalable beyond individual communities with certain types of characteristics (such as shared local infrastructures) and across industries.

2.3.3. CSIRO egg industry community research

PATHWAYS TO GREATER TRUST AND ACCEPTANCE OF THE EGG INDUSTRY

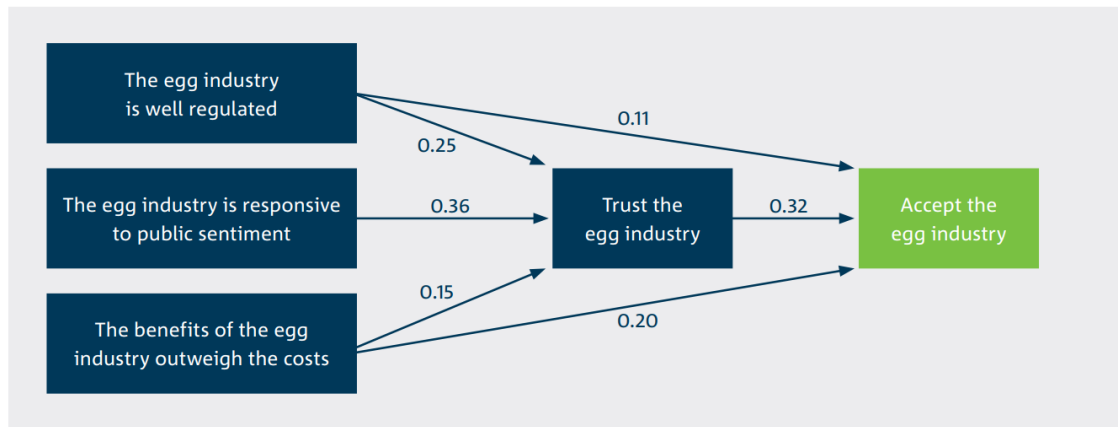


Figure 3. Pathway to trust and acceptance of the Australian egg industry developed by Moffat et al. (2018)

The recent CSIRO research (2018) for Australian Eggs is arguably the first attempt to develop a model of trust for a specific Australian food or fibre production industry. The key elements of trust that were identified through surveying a representative sample of over 4,700 Australians included the responsiveness of the industry to community sentiment. Confidence that the industry is well regulated was also related to trust; the idea that there is a net benefit to having an egg industry was least strongly associated with trust and more strongly associated with acceptance. However, it is difficult to determine from these results whether the community perceives the industry to be well regulated because they think that it is regulated by government or because it is self-regulated. However it is interesting to note in this model that responsiveness is not directly linked to industry acceptance, but that trust is, highlighting further that trust involves recognition by the person or organisation being trusted (the trustor) that something has been entrusted to them.

2.4. Social licence as compared to trust

The term 'social licence to operate' arose within the broader context of the practice and theory of corporate social responsibility (CSR). CSR emerged from debates about the role businesses should play in society and resulted in a body of literature describing how relationship-building and collaborative approaches associated with the impacts of industry on individuals and society contribute to how businesses are viewed. As Knih (2012) describes it, CSR is not a one-way, top-down relationship but instead results from collaborations between communities and corporations to build mutually beneficial relationships. Engaging in CSR practices means that a company recognises that development and growth does not occur independently of the broader community (Spence

2011). Ultimately, CSR can manifest itself in multiple ways, including in the increasingly popular notion of social licence to operate (SLO).

The term 'social licence to operate' is a shorthand way to describe permission being given by communities for businesses and others to exploit resources for private purposes or gain (Martin and Shephard 2011; Moffat et al. 2016; Rooney, Leach, and Ashworth, 2013), particularly shared or natural resources (Edwards et al. 2016). It is a voluntary, unwritten consent that a community attaches to the use of a natural resource (Shephard and Martin 2008) and goes well beyond compliance with regulations and laws to working with communities and stakeholders to shape how businesses operate. Organisations that have a SLO may not even recognise they have one. However when SLO is removed, its absence becomes obvious to all, typically resulting in human and economic costs that sometimes can be irreparable (Rooney, Leach, and Ashworth 2014).

Edwards et al. (2016) suggest that the concept of SLO emerged in the 1990s due to the increasing pressure on the public image and reputation of industries, including forestry, mining, oil and gas, and agriculture, and characterize it as the informal approval or acceptance that civil society, including communities, NGOs, or the public, grants to an individual company or to an industry engaged in the use of natural resources. Mureau (2000) highlights that an early use of SLO was in relation to the oil industry when corporate giant Shell recognised that their commercial freedoms were being limited by society, and that a wider view was needed to allow them to carry out their business imperatives. Recognising such a phenomenon has resulted in major shifts in how companies emphasise their social responsibilities and their commitment to ensuring the social acceptability of their business practices. If industry is seen to violate the community expectations with regards to how it should operate, it is within the power of the community to curtail or stop the industry's activities in a variety of ways, including through legal constraints, market penalties such as consumer boycotts, or in extreme cases, by direct and sometimes violent action (Martin and Shephard 2011). Thus, the opinions of communities about things which impact on an industry or sector's SLO are becoming a critical focal point for decisionmaking, in part because industry is no longer isolated in the corporate world (Knih 2012). Due to the mounting pressures from communities and other stakeholders, relationships are now essential (Boehm 2002). Good relationships that account for stakeholders' needs and expectations are now viewed as the foundation for good business and, in turn, for the maintenance of SLO (Boehm 2002; Gunningham et al. 2004; Lynch-Wood and Williamson 2007). A company may have legal access to a resource, particularly a shared resource, but this right is no longer a sufficient basis for running a business (Knih 2012).

Specifically with regard to agriculture (and which has relevance for the food and fibre sector more broadly), Martin and Shepherd (2011) suggest that the sector faces similar challenges to other resource-use industries, such as mining, since the primary industries rely on access to natural resources; thus the community is in a position of power to place conditions on the use of these resources. Mureau (2000) suggest that the primary industries have the responsibility to apply the changes that society wish, also suggesting that the challenge is to establish an agricultural sector where practices continue to be carried out how consumers and society members expect.

For all of these reasons, SLO has been of particular interest for the primary industries in recent years. There is no doubt that considerations about SLO overlap with issues associated with community trust: for instance, some authors note that social trust is a key consideration in the maintenance of SLO (Fukuyama 1995; Siegrist et al. 2005; Weber and Hemmelskamp 2005; Dovidio et al. 2006). However, the concept of SLO has become overused particularly in Australian popular media coverage and often in a manner that unhelpfully takes it out of its original and intended context. More importantly as noted by other critics (e.g., Miller 2014; see also Rooney, Leach, and Ashworth, 2013), the concept of SLO is based on drawing artificial boundaries that tend to create an 'us' versus 'them' atmosphere, which is particularly problematic in the case of the food and fibre sector.

3. Food and fibre production in a changing Australia

3.1. Introduction: Is there an urban-rural divide?

Australia has undergone a period of rapid social change in the last 50 years. In that time, the contribution of agriculture to Australia's GDP has reduced considerably (Daly et al. 2015). Along with population growth, increasing urbanisation, and technology-based increases in production efficiency, the proportion of Australia's population directly involved in food and fibre production has decreased considerably in recent years (e.g., there has been a documented 60% decline in the number of farmers since 1976, see Barr 2014). However, many Australians still believe that modern Australia was "built on the sheep's back" with much of Australia's history being described through a "frontier narrative" (Furniss 1999). Support for rural Australia is considered to be part of residual agrarianism, or in its Australian manifestation, what is termed 'countrymindedness' (Aitkin 1985; Botterill 2009). Countrymindedness remains prevalent and is reinforced through popular culture and numerous marketing campaigns (Finkelstein and Bourke 2001; Botterill 2009; Phillipov 2017).

Despite the persistence of cultural values related to the inherent value of farming (Daly et al. 2015), the average Australian's connection to the land and primary production continues to decline. Direct links between a mainly urbanised population and rural Australia are becoming weaker. This demise of the 'country cousin' is often cited anecdotally as the cause for a growing gap between producers and non-producers (or the community at large) and has also been suggested as a key contributor to increasing concerns about animal welfare, the use of chemical pesticides, and the environmental impacts of agriculture. For example, the recent AgDayPoll commissioned by the National Farmers Federation (2018) revealed that 65% of 18-29 year olds had no contact with farmers in the last 12 months and that 52% of this age group felt disconnected from farming and uninformed about the industry. Almost a quarter of the people in this age group (23%) stated that they did not care at all about how their food and fibre is grown. These findings are being interpreted by some as a cause for concern. However, it is important to place these statistics in their broader context: more than half of Australia's 18-25 year olds are still living with their parents (Thomas 2015) and hence are not necessarily engaged with broader issues in general.

Overall, however, the public is demanding greater involvement in decision making about the resource use (e.g., soil and water), and the health, animal welfare and environmental impacts associated with food and fibre production. They expect to receive a fair share of benefits (Moffatt et al. 2016), and require assurances that regulation is adequate (Prno 2013). Governments have also demonstrated the ability to enact new regulations quickly in a crisis, as occurred with the live animal

export trade (Munro 2015). Such crises can have an impact on trust, with the ability to cause significant impacts for those involved in primary production, including the public which depends on this system.

3.2. Trust in Australian food and fibre production

Within the scholarly literature, the growing ‘distance’ between food producers and consumers has been suggested as a cause of increasing distrust of our food systems (Meyer et al. 2012; see also Hobbs and Goddard 2015; Muringai et al. 2017; and discussion above). Specific literature on trust in relation to Australian food and fibre production tends to focus on a few areas, notably food labelling and safety. For instance, Tonkin et al. (2016; see also Wilson et al. 2013; Tonkin et al. 2014) argue that labelling may in fact damage consumer beliefs in the trustworthiness of food system actors, because food labels act as an access point which exposes points of vulnerability where trust can be developed, reinforced, or eroded (see also Bray and Ankeny 2015). This view aligns with the more theoretical scholarship on trust reviewed above, since information alone is not typically enough to instil a sense of trust. Furthermore, lack of trust in food can lead to broader-scale detrimental effects, such as vulnerability to misinformation and poor dietary choices (Meyer et al. 2012). These authors suggest that the decline in consumer trust in food production and a desire for increased regulation of food are linked to shifts in food production (particularly those related to globalisation, such as increased food miles), which have resulted in a growing gap between producers and consumers that in turn creates a “deficit in consumer knowledge and control over the foods they purchase” (Meyer et al. 2012, p. 634). This research found that consumers in rural areas, in comparison to those in metropolitan areas, were more trusting of food production as a result of their direct experiences with the food production sector (Meyer et al. 2012). However, some of this work reveals that farmers are considered the most trusted part of the Australian food system. Another study from the same group of researchers showed that trust in farmers was found to be the highest (93%), compared to trust in supermarkets (66%), the media (54%), and politicians (44%). Similarly, work by Coleman et al. (2015) demonstrates that within the livestock industries, farmers are trusted the most, while those involved in shipping animals by sea are trusted the least. Moffat et al. (2018) also show that the community trusts the egg industry more than federal and state governments and retailers, but less than welfare groups and research institutions. In relation to fisheries, previous research has demonstrated that fisheries management is not an issue that is top of mind for many Australians; scientists are the most trusted authorities on fisheries issues and are more trusted than environmental groups (Essence Communications 2015). These findings also highlight that the

activities of other actors in the food and fibre production system, such as scientists, processors, and retailers, also influence trust (Dixon 2003; Parker, Brunswick, and Kotev 2013; Phillipov 2016b; Bray and Ankeny 2017a).

In summary, research specifically on trust is quite limited and largely fails to go beyond food production to consider other parts of the food and fibre sector. Existing literature also does not explore the cross-sectoral challenges or themes that are recognised as essential to future planning in the sector. The following section outlines the problems with attributing the erosion of trust to a lack of knowledge about primary production and discuss the relationship between trust, attitudes, and perceptions.

3.3. The urban-rural divide as a knowledge gap

The 'gap' between producers and the community is often described as a gap in knowledge about production practices. It is true that Australians have been shown to have poor agricultural literacy, both amongst school children (Hillman and Buckley 2011) and adults (Worsley et al. 2015). However, focusing solely on knowledge is problematic, firstly because high levels of knowledge and positive attitudes are not always positively associated (as discussed further below) and because there is no consensus on what kind of knowledge is necessary in order to make decisions about what is 'right' and 'wrong' within food and fibre production systems.

It can also be relatively easy to frame the community as ignorant if they are asked difficult questions that do not relate to their daily lives, as potentially occurred in a recent paper by Worsley et al. (2015) which found that Australians' knowledge of agriculture was low. However, knowledge in this instance was assessed by the ability to correctly answer multiple-choice questions such as: "Since 1990 Australian farmers have decreased their GHG emissions by X?" and "In 2010-2011 the value of farm exports was X?" by choosing from among five potential answers. The correct answers to the above are 40% and \$33 billion respectively. The authors did not supply the alternative incorrect answers, so that it is difficult to assess how easy it would be to discriminate this answer from the other options provided, but it is doubtful that even all of those working within the agricultural sector would have been able to identify the correct answers! Furthermore, those in regional areas did not correctly answer these questions more frequently than those in metropolitan areas. It also is important to note that the correct response rate to these questions was much lower than chance. Although the community should be encouraged to weigh the benefits of having food and fibre industries against the risks and costs associated with

them, there are many other things that may be more important for them to know than the precise percentage reduction in greenhouse gas emissions since 1990, or the precise value of exports in any particular year.

There have been other studies considering how knowledge levels shape attitudes to food and fibre production. Work by Coleman et al. (cited in Coleman 2010) shows that the public knows very little about specific animal production practices, such as 'induced moulting,' 'curfew,' or 'lairaging,' and thus the authors caution that the public may be susceptible to persuasion or misinformation about such practices. In a subsequent study (Coleman et al. 2015), participants were asked to choose the correct alternative out of two possible descriptions of animal production practices. Correct responses to statements relating to pre-slaughter stunning, Kosher slaughter, and crutching were little better than chance; however the correct statement about Halal slaughter typically involving pre-slaughter stunning in Australia was only selected by 26.7% of respondents, suggesting inaccurate perceptions with regard to this practice.

In addition to 'factual' knowledge, knowledge has also been assessed by asking people how much that they think they know about a topic. In these situations, it is impossible to know how respondents came to know the things they think they know, and more importantly what the underlying values are associated with that knowledge. Self-assessment was used by Taylor and Signal (2009) to understand attitudes to buying eggs with welfare claims; their data shows that high levels of self-assessed knowledge by those in metropolitan areas were more likely to be associated with willingness to pay more for eggs with welfare claims as compared to those in regional areas with high levels of self-assessed knowledge, again highlighting that 'knowledge' about a production practice does not always equate to positive attitudes with regard to that practice.

3.4. The problem with the 'knowledge deficit' model

The view that community ignorance about an issue is the sole or primary cause of negative attitudes about that issue is known as the 'knowledge deficit' model (Sturgis and Allum 2004). The concept has underpinned much activity and scholarly attention in science communication and public understanding of science (Palmer and Schibeci 2012). The knowledge deficit model continues to be one of the main ways that debates about particular applications of science or specific technologies are framed, but a substantial body of scholarship has shown that this model is flawed, and that viewing conflicts over practices as simply about a lack of knowledge to be fixed via education is naïve

at best (Hansen et al. 2003; Ventura et al. 2016; Bray and Ankeny 2017b). It may also be contributing to increasing negative opinions towards some technologies and particular issues, also known as the 'boomerang effect' (Hart and Nisbet 2012). The idea that ignorance and negative attitudes are closely linked has been particularly associated with debates about biotechnology and genetically modified crops (Bray and Ankeny 2017b); however, it is clear that concerns about genetically modified crops are related to factors other than knowledge of the science behind the development of these crops (Bray and Ankeny 2017a; see also section 4.4.2 for more discussion about agricultural technologies). In addition, as described in section 2 of this report, the relationship between knowledge and trust is complex: as discussed above, trust relies to a certain extent on the trustor not having knowledge or skills about the issue in question but does require some knowledge about the reliability and competence of the person or organisation who is being trusted. So, for instance, in the case of genetic modification, knowledge related to establishing the trustworthiness of the actors associated with the technology may be more important than understanding the 'science' involved in the production of GM crops. Knowledge clearly has a role in trust and opinion formation (see section 3.4 below), but simple education about certain practices will not necessarily increase support for them.

3.5. Attitudes to and perceptions of Australian food and fibre production

Given the lack of research directly on trust, we must rely on the limited scholarly empirical research undertaken that explores broad community perceptions of food and fibre production in Australia in order to understand where trust may be fragile particularly with regard to mismatches between perceptions and reality, which can be important drivers in loss or decline in trust. This research has identified that Australian adults believe that farmers are good contributors to Australian society, are well-educated about agriculture, use technology to improve their business, are good stewards of the land, and are generally good business operators (Worsley et al. 2015). Australian adults also believe that farmers look after their livestock well (Cockfield and Botterill 2012; Worsley et al. 2015) and are producing clean, safe food (Cockfield and Botterill 2012).

Cockfield and Botterill's study (2012) has broader implications for our understandings of community trust as they explored the relationship between attitudes to agricultural practices, the attribution of values and characteristics to 'farmers,' and the voting intentions of participants. For instance, they found that most people across all voting intentions agreed that Australian farmers generally undertake sustainable farming practices, adequately look after animal welfare, and produce clean

and safe food. Nationals voters expressed the most agreement and Greens voters the least, but even more than 50% of the Greens voters agreed with the statement about sustainability.

These data reveal that a range of values play important roles in the formation of perceptions. This paper also determined that 66% of respondents believed that farmers should receive more or much more financial assistance from the government. Admittedly, these data are a bit dated (as they are nearly 10 years old) and were collected prior to the live export debates in 2011, discussions about free-range egg labelling, the dairy farmers support campaign, and the recent drought. As with similar studies, a major criticism of this work is the use of the word 'farmer' and the difficulties in knowing what participants are envisioning when they respond to questions of this type. Thus there is a need to revisit these important types of questions in order to update our understandings of current perceptions, but also to assess whether particular industries or types of agriculture tend to be more front-of-mind than others when attitudes are surveyed and how these types of perceptions and attitudes relate to community trust.

There has been some notable interest in the scholarly literature about community attitudes towards forestry. Kathryn Williams from the University of Melbourne has been the most prominent author who explores public acceptance of plantation forestry. For instance, Williams (2011) found that plantation forests were far less acceptable than more traditional forms of agriculture, and less desirable than wind farms. Williams (2014) also notes that the public differentiates between the impacts of pine plantations and eucalypt plantations, as well as the impacts of ownership of the plantation. They found that plantations were more acceptable when: planted on only part of a property, rather than the whole; planted in areas with local processing facilities, rather than for woodchips for export; planted in areas that had only a few plantations; and planted by a landowner on land they owned, rather than on land leased to a company (Williams 2014, pp. 351-2).

Community attitudes towards the sugar industry have received limited attention within the scholarly literature and industry research (based on available information). A study conducted by Mallawaarachchi et al. (2011) used choice modelling to explore community values about land use in Northern Queensland. The results demonstrate that that environmental values of wetlands are comparable to returns from commercial production of sugar cane. The authors argue that land allocation policies should recognise the different community values alongside commercial benefits of production to allow for resources to be used more efficiently.

With regard to the cotton industry, a notable publication by Roth (2011) outlines the initiatives undertaken to defend SLO, particularly in response to public outcry about pesticide use and its potential impact on community health, water quality, fish mortality, and residue in cattle in the

1980s and early 1990s. He also notes the more recent public attention on water use and irrigation of cotton, particularly in relation to the ongoing drought, which led to the cotton industry commissioning five studies between 1995 and 2004 to investigate public attitudes. Roth (2011) notes changes in community attitudes towards the cotton industry over this period, particularly highlighting the reduction in concern over chemical use, spray drift, and water use. However, these studies were conducted in cotton growing regions, within towns that are considered to be “major cotton towns” or “large regional centres nearby cotton communities, but themselves are not cotton towns” (Roth 2011). To our knowledge, there has been no further research conducted since 2004 to understand how the community understand the cotton industry today, whether previously identified concerns still persist, and whether concerns relating to other broadacre industries are translated to the cotton industry.

3.6. Broad national and international changes are impacting on trust

Thus far in this section, the focus has been on a perceived urban-rural gap and its potential impact on trust. However, it is important to note that there are a number of other drivers impacting broadly on community perceptions of the sector, and which are influencing levels of community trust; many of these are beyond the food and fibre sector’s power to influence and are issues to which the sector will need to adapt. Any efforts to build, rebuild, and maintain community trust in Australia’s food and fibre sector need to be resilient in the face of these ongoing challenges. These factors have been explored in various recent reports on agriculture (e.g., Daly et al. 2015; Lockie 2015) and thus will not be examined in detail here, but can be summarised as follows:

- changing demographics: immigration and multiculturalism, regional migration, an aging population, changing access to education, and a changing workforce (AgriFood Skills Council of Australia 2015);
- climate variability and adaptation including access to water (AgriFood Skills Council of Australia 2015);
- shifting economic forces, such as the uneven recovery from recent global financial crises, shifting manufacturing base (including in Australia), free trade agreements, exchange rates, and growing Asian markets (AgriFood Skills Council of Australia 2015; Pratley 2013);
- the emergence of biofuels (Centre for International Economics 2015) and other renewable sources of energy;
- changing technologies and access to them, including the use of the internet, social media, and ‘disruptive’ technologies such as mechanisation and automation, intelligent and remote sensing, and so on (AgriFood Skills Council of Australia 2015; Daly et al. 2015; Liao and

Martin 2009 cited in Pratley 2013);

- consolidation and bifurcation of production in Australia, such as specialisation within the production sector including high-volume production and/or niche, value-added production, although it has been suggested that the production of bulk commodities will remain the most important contribution to the economy (AgriFood Skills Council of Australia 2015; Daly et al. 2015);
- retail concentration in only two to three major retailers, and vertical integration in production chains (AgriFood Skills Council of Australia 2015);
- biosecurity, especially in light of increasing global movement (AgriFood Skills Council of Australia 2015);
- the changing policy environment, in particular current policies to develop Australia's north, improving agricultural competitiveness (AgriFood Skills Council of Australia 2015, Daly et al. 2015);
- contestable resources, for example hydraulic fracturing, managing the Murray-Darling basin, and marine reserves (AgriFood Skills Council of Australia 2015), and competition for resources with tourism, biodiversity conservation, urban development, forestry, and mining initiatives (Daly et al. 2015);
- labour supply, including temporary and holiday workers (AgriFood Skills Council of Australia 2015);
- perceptions of agricultural careers and agriculture as a 'sunset' industry, as well as that the family farm is the preferred model of farm ownership (Daly et al. 2015);
- urban greening, including an emphasis on urban food production and maintenance of peri-urban food and fibre production areas (AgriFood Skills Council of Australia 2015, see also section 4.4.4); and
- global food trends such as consumer desire for increased transparency, convenience, and nutritious food (AgriFood Skills Council of Australia 2015).

3.7. Conclusion: Trust is the bridge to these 'divides'

In any domain of knowledge, there will always be a knowledge gap between experts and non-experts: it is the role of trust to overcome this gap and allow us to function as a society. No doubt there will be continuing concerns about the lack of contact between producers and non-producers, increasing distance and complexity along the value chain, and the relative invisibility of many food and fibre production related processes as contributing to growing distrust, particularly as urbanisation continues to increase. However trying to close the 'gap' through increasing knowledge

or education alone will not be effective. Trust-building provides opportunities to bridge these gaps and will require developing ongoing dialogues with various communities about trust and its drivers. Possible mechanisms for creating these types of dialogue are discussed in section 5.

4. Specific drivers of community trust in Australian food and fibre production

4.1. Introduction

Trust in Australia's food and fibre industries is shaped by a number of influential intermediaries, including media and the retailer sector. Australia's unusually concentrated retail environment, combined with rapidly changing media industries, means that both media and retailers have become active participants in food and fibre debates. However, how they become successful in galvanising community support for particular issues is still not well understood. Why do some issues flare up as major controversies (e.g., live export and free range eggs), while others fly under the radar without notice? After outlining the roles of media and retailers in shaping community trust, this section reviews the literature on the recent key controversies related to animal welfare, agricultural technologies, environmental impact and sustainability, and peri-urban agriculture to highlight the need for a cross-sectoral approach to these important and volatile issues.

4.2. Media

Media is a major source of information about the food and fibre sector for many urban Australians. Over the past decade, mainstream media has also helped to popularise so-called 'ethical' food production and consumption (Phillipov 2017), and become an important intermediary for different groups, circulating different (and often competing) information and opinions within the public domain (Gong 2013). While media is generally not trusted by the broader community as a source of information about food, the conflicting messages about food which it perpetuates creates further distrust of various information sources more generally (Ward et al. 2011). Witt et al. (2009) contend that the urban-rural divide (described in section 3.1) seems to only be a myth which exists within rural people's minds, or at least a narrative perpetuated by the media, and particularly by the rural press. The findings of Witt et al. (2009) reinforce the need to explore the role of the media in shaping how issues are discussed in the everyday. Other research has demonstrated that media plays a significant role in shaping public debate and influencing outcomes (Hutchins and Lester 2006), and that consumers attribute at least part of their decisionmaking about food and fibre purchases to media coverage (Tonsor and Olnyk 2011; McKendree, Croney, and Windmar 2014; Bray and Ankeny 2017a, b). Media can also have significant impacts on political decisionmaking, with mainstream news coverage often viewed by decisionmakers as a 'proxy' for public sentiment. As Coleman (2018) suggests, sometimes the campaign for change in industry practice is generated by

the mainstream media and is exacerbated by public responses which can ultimately lead to governmental and regulatory responses.

A combination of emerging consumer politics (such as the turn to 'ethical consumption,' see Lewis and Potter 2011) and ongoing structural change within local and global media industries have contributed to an intensified media interest in food over the past couple of decades. From *MasterChef* to Instagram, food has proven successful in attracting both audiences and advertisers at a time when other media genres and platforms have struggled to remain viable. Media representations—including news, social media, television cooking shows, cookbooks, and lifestyle media—are characterised by a repeated set of ideas about what constitutes 'good' food (Phillipov 2017). 'Good' food is often understood to be 'ethical,' 'small-scale,' produced in bucolic rural surrounds, and originating from short, highly transparent production chains (e.g., 'paddock to plate'). This is demonstrated most clearly in television cooking shows like *Gourmet Farmer*, which is structured around host Matthew Evans' quest to "know and trust what [he] eat[s]," which necessitates either growing the food himself or being "no more than one degree of separation from the person who does." Popular food media often pits 'industrial' agriculture against 'small-scale,' 'natural,' or 'authentic' alternatives (Lockie 2006). 'Good' food is often presented as exemplifying qualities of "embeddedness, trust and place" (Goodman 2003, p. 1), with (emplaced) "food from somewhere" positively contrasted with (industrial) "food from nowhere" (see Campbell 2009, p. 309).

More generally, Lockie (2006) describes how food and agriculture is represented in Australian, UK, and US media and suggests a prominence of the "modern agriculture is making us sick" discourse, particularly as industrialised 'bad' agricultural practices are pitched against organic 'good' production methods. Research conducted by Buddle and Bray (forthcoming) also demonstrates that discussions of issues such as farm animal welfare in the media are often related to issues of food safety and human health, emphasising the fact that issues cannot be considered in isolation as one issue often impacts directly on another even when they may seem to be unrelated. The rising popularity of this type of food media is speaking to a "broader sense of discontent with the instrumental culture of late modernity, [and reflects] a concern with re-enchanting the contemporary everyday through promoting less alienated, more engaged modes of consumption" (Lewis 2008, p. 232). Such media are "obviously targeted at the audience's subliminal anxiety (fuelled by food scares, intensive animal production, superstore monopolies and other concerns)," and reflect the audience's desire to vicariously experience "the natural 'source' of the food which they fantasise about" and to access a "source of meaningful consumption outside of the self-alienating experiences of their day-to-day reality" (Versteegen 2010, p. 459-60).

Highly successful television cooking shows like *MasterChef Australia* and *My Kitchen Rules (MKR)* have significantly changed the eating, shopping, and cooking habits of Australians: sales of kitchen gadgets and supermarket ingredients surge by as much as 480% after appearing on these shows, while techniques like cooking ‘sous vide’ are now in common parlance (Sinclair 2010). Food television has also expanded the cultural influence of celebrity chefs, many of whom are now household names thanks to their appearances on *MasterChef* and *MKR*. Some of the chefs that regularly appear on these programs have as many as 160,000 followers on Instagram, and they are not only key influencers on social media, but also have become increasingly prominent voices in traditional news media as popular ‘experts’ on food issues.

The growth of food media has also contributed to the growing prominence of food and fibre producers and their stories. Putting a ‘face’ to the farmer has become a powerful marketing strategy for everyone from farmers’ markets to major supermarkets, and there are now whole genres of food television, food blogs, magazine and news features, and cookbooks dedicated to profiling food producers and their production methods. However, some types of food and fibre producers are more likely to appear in media than others. Those who appear in lifestyle media are most likely those who adopt ‘traditional’ methods of production and who conform to ‘romantic’ stereotypes about farming: media texts tend to feature an unusually high proportion of middle-class professionals who have escaped their urban lives to become farmers (Phillipov 2016a). In news media, the stories most likely to galvanise public support are those that feature ‘traditional’ multi-generational family farmers; from the supermarket ‘milk wars’ to the recent drought in south-east Australia, the farmers most likely to appear in news coverage are predominately white, heterosexual, and male. Thus media present a far narrower range of producers and production practices worthy of public support and concern than is representative of the diversity of those involved in Australian food and fibre production (Phillipov 2017). Agricultural producers are far more likely to be presented positively than commercial fishers, for example, while some types of food and fibre producers, such as foresters, are likely to only appear in negative contexts.

The success of these representations for media audiences relies on their capacity to tap into audiences’ emotions. As described above, depending on the type of media text, this process can involve either tapping into the romance of the “rural idyll” (Bell 2006) or linking Australia’s agricultural identity to powerful myths of nation (Murphy 2008). Engaging emotion has also become an important strategy for NGOs seeking to galvanise public support particularly for environmental and animal welfare causes. The role of emotion is still an emerging area of research, and its power is not yet fully understood. Of the studies that have examined this issue, research findings vary, which

indicates that further research is needed to understand more precisely the conditions under which appeals to emotion are effective and the conditions under which they are not.

For example, studies of environmental campaigning in issues such as forestry point to the central role of emotion in achieving successful protest action. Using the example of the UK Save the Forests campaign as an example, Lockwood (2013) argues that the mediation of public feelings is vital for understanding environmental conflict. Focusing on Twitter, he shows how media is more than simply a carrier for emotion-laden messages with the aim of reaching the public: social media poses structures that can *amplify* emotion, bring people together, and facilitate the broader circulation of protest messages. This is why, he argues, social media must be understood—and used—as ‘connectedness systems,’ and not as communications media (Lockwood 2013; see also Lockwood 2016).

Rates of media coverage vary considerably across Australia’s primary industry sectors. Some such as forestry and fisheries experience fairly consistent levels of media coverage over time, often with the same issues or issue types regularly re-appearing throughout news and social media. Others (e.g., cotton) tend to receive media coverage only in irregular ‘spikes’ prompted by a specific issue or event. In the Australian context, perhaps no other media outlet has contributed more to media coverage of Australia’s food and fibre industries than ABC’s *Four Corners*. A *Four Corners* exposé can result in the kind of sustained media coverage that can significantly impact public trust, as demonstrated by the 2016 story on Tasmania’s salmon industry or the 2012 story on live export. Such stories can impact on community attitudes in ways that cost producers significantly: the regulatory changes resulting from the *Four Corners* exposé on live export have been estimated to have cost Northern Australian producers over \$1 billion (Bettles 2017). But while some stories have significant impacts, others do not; more research is needed to understand how and why this occurs. For example, *Four Corners*’s recent exposé on glyphosate and the ‘Monsanto Papers’ (2018) resulted in little sustained media attention, at least within mainstream channels. But it is not necessarily clear why this is the case: was ‘The Monsanto Papers’ a less successful piece of journalism than, say, ‘A Bloody Business’? Was it less impactful because of its focus on farmer, rather than consumer, health (and hence was of less interest to the general public)? Was it due to the effects of ongoing changes to journalism as a profession, which has resulted in fewer skilled agricultural journalists able to address agricultural issues in ways that are engaging and relevant to audiences?

These processes of attention and dissemination need to be far better understood, as they are not explicable via the media monitoring typically used by Australian food and fibre industries to monitor the media coverage relevant to their sectors. Standard techniques of sentiment analysis, for

example, do not capture the nuances of contemporary media representations and their impacts. Media monitoring techniques of identifying stories on the basis of sentiment (e.g., by identifying stories as ‘positive,’ ‘negative,’ or ‘neutral’) can lead to a mischaracterisation of sentiment in some cases. For example, stories in which the leading message is that farmers are not receiving a fair price for their produce are typically coded as ‘negative’ (because they express a negative sentiment), when in fact such stories suggest strongly positive attitudes towards Australian farmers. Coding such stories as ‘negative’ contributes to a higher proportion of negative stories overall and can lead to an overestimation of problems related to trust and community support. Standard techniques of media monitoring also tell us very little about why some messages become salient (and some do not), why some messages are preferred by media producers over others, why audiences perceive some messages as persuasive (and others as not), and what the impacts of particular media messages are on broader community trust.

Traditional forms of media monitoring have limitations when applied to social media. The agricultural sector has taken an interest in the role of social media in communicating about its practices, particularly its use by activists protesting against particular agricultural practices (Buddle, Bray, and Pitchford 2017). Reliance on more quantitative metrics and measures typically leads to a disproportionate focus on Twitter in academic and industry research. Twitter data is the most easily accessible of all the social media platforms, making it very popular with researchers, but Twitter is used far less than other social media sites (~23 million worldwide users as compared to ~527 million users of Facebook and ~400 million users of Instagram), particularly in Australia. Despite the occasional ‘Twitter storm’ that can have significant industry impacts (such as that surrounding the ‘supertrawler’ FV Margiris in 2012, see Tracey et al. 2013), its influence overall is far more limited. One important issue is that Twitter users skew towards the highly educated, making it less representative of public sentiment than other social media platforms. Understanding the complex impacts of social media on community trust requires far deeper qualitative analysis than is typically done using traditional media monitoring, particularly of the interactions of users and messages across media platforms (considering, for example, how stories might move from news to Facebook to Instagram and back again) in order to understand not just *what* messages and views are circulated, but also *how* and *why* they become powerful. The complexities of the contemporary online use have produced an unpredictable and highly volatile media environment, the impact of which cannot be understood by quantitative metrics or sentiment analysis alone.

Emerging research on “mediatised environmental conflict” indicates that it is in the “mutually constitutive interactions” between activist strategies and campaigns, journalism practices and news reporting, formal politics and decisionmaking processes, and industry activities and trade that

conflicts emerge (Hutchins and Lester 2015, pp. 337, 343). Analysing the points of intersection between these four spheres of action is essential for understanding the “unpredictable and charged character” of environment conflict (Hutchins and Lester 2015, p. 339) and offers a potentially useful model for capturing broader dynamics of conflict affecting the food and fibre industries in a convergent media environment.

4.3. Retail

The retail sector is undoubtedly another key driver contributing to community views on and trust in the food sector in particular. However the prominence of discussions about trust in this domain clearly has spill-over effects into the food and fibre sector as a whole. Research on retail has focused mainly on the role of Australia’s unusually concentrated supermarket sector. With Australian supermarkets facing increasing media and public scrutiny for their duopolistic practices, community distrust in supermarkets rose sharply around 2011–12. In 2012, the *Australian Financial Review* reported that a long-running survey of consumer sentiment in Australia found that distrust in Coles and Woolworths had risen to 72% (McIntyre 2012).

Ironically, supermarkets’ immense control over the domestic supply chain (Lawrence and Burch 2007), combined with concerted efforts at reputational enhancement in recent years (Richards, Lawrence and Burch 2011; Lewis and Huber 2015), has seen supermarkets become a key determinant of trust in Australian food systems. Evidence of declining trust in supermarkets has caused major retailers seek to strategically manufacture” consumer trust through a range of strategies including direct quality claims (e.g., private standards, accreditation, and quality assurance schemes) and discursive claims-making (such as ‘authentic’ scenes on product packaging and an in-store marketplace atmosphere) (Richards, Lawrence, and Burch 2011, p. 27; see also Keith 2012).

Research by Dixon (2007) has showed that supermarkets have sought to transform themselves from commercial companies to food and lifestyle authorities in ways that both position the supermarket as trustworthy and work to shape the context in which consumers make other decisions about consumption practices. Supermarkets have become powerful gatekeepers of food standards (Lawrence and Burch 2007) and have successfully integrated supermarket brands into media and community spaces through sponsorship of television cooking shows (Lewis and Phillipov 2015; Phillipov 2016b, 2017), brand partnerships with celebrity chefs (Phillipov and Kirkwood 2018; Lewis and Huber 2015; Richards, Lawrence, and Burch 2011), and integrated advertising campaigns that put a ‘face’ to the farmer (Phillipov 2016b).

Supermarkets' power to shape public attitudes about Australia's food and fibre industries has been significantly expanded by the large retailers' moves into the space of 'ethical consumption.' Ethical branding campaigns focused on animal welfare issues, including free-range chicken and eggs, and sow-stall-free pork, are now a feature of both major supermarkets' brands. Research has focused on the 'unlikely marriage' between supermarkets, celebrity chefs, and animal advocacy groups that have emerged as a result of supermarkets' attempts to capitalise on consumer interest in ethical consumption (Lewis and Huber 2015). As Lewis and Huber (2015) put it:

In a hostile and contested food environment, the supermarkets have attempted to associate themselves with a range of community actors who are perceived to be trustworthy and authentic... [S]upermarkets have drawn not only on the ethical star power of celebrity chefs [such as Jamie Oliver and Curtis Stone], but have also attempted to tap into the integrity of other players with significant moral weight and standing in the community, such as animal welfare organisations [such as the RSPCA], via strategic cross-branded partnerships.

Coles' move to 'RSPCA-Approved' chicken and eggs, accompanied by advertising campaigns and in-store signs fronted by celebrity chef Curtis Stone, are a key example of how supermarkets' interventions in the space of ethical consumption have the power to substantially shape public views on food issues.

Research by Parker and colleagues has shown how, in the absence of effective government or industry regulation, supermarkets have responded to community concerns about animal welfare by setting their own welfare standards. Using examples of free-range chicken and eggs, and sow stall free pork and ham, Parker and colleagues argue that supermarkets' welfare standards essentially constitute 'industrial' production with only theoretical improvements in the lives of most of the animals involved (Parker 2013; Parker, Brunswick, and Kotey 2013; Parker, Scrinis, and Carey 2018). Given that many of supermarkets' higher welfare options are marketed as being "better tasting" and at "no extra cost to you," their work also suggests that transferring animal welfare from an animal advocacy concern to a matter of general consumer concern has enabled supermarkets to shift the focus from "absolute standards of animal welfare" to a "balanced consideration of ethics, price and taste," with supermarkets positioning themselves as the authoritative judges of how to best judge this balance (Parker, Scrinis, and Carey 2018, p. 209). This tendency to promote 'ethical' products on the basis of both taste and price tie product choices to questions of "lifestyle, pleasure and consumer choice" in ways that not only boost the 'ethical credentials' of supermarket brands (Lewis and Huber 2015, p. 298), but also substantially shape the public framing of issues that are key determinants of community trust in Australia's food and fibre industries.

4.4. Contentious issues

In addition to the influences of media and retailers, there have been a number of specific hot button or contentious issues that have captured considerable public attention, and thus in turn have had broader impacts on understandings of the primary production industries. We contend that these sorts of issues may ultimately be affecting community trust in Australia's primary industries, particularly given the interconnectedness of the various industries which compose the sector but also because of their interrelation within the public imagination. Issues such as animal welfare, use of biotechnologies including genetic modification, land use, environmental sustainability, and peri-urban agriculture have all received considerable attention within the scholarly literature as well within the publicly available grey literature. What is already known about each of these issues is outlined in greater detail below, with attention to the broader implications of these issues and lessons to be learned for the food and fibre sector more generally.

4.4.1. Animal welfare

Animal welfare recently has been one of the most topical and debated issues in relation to Australia's primary industries. It has received significant attention in the scholarly literature from many different perspectives, from studying the important components to welfare from an animal science perspective (Bray, Buddle, and Ankeny 2017) to understanding the motivations behind ethical consumption (Bray and Ankeny 2017) and exploring meat consumers' understandings of farm animal welfare (Buddle, Bray, and Ankeny 2018). Some research tends to suggest that concerns about animal welfare are related to the animal itself, and often has relied on quantitative research methods and willingness to pay for products with animal welfare claims (Taylor and Signal 2009; Malek, Umberger, and Rolfe 2017) or has focused on specific production methods such as lamb finishing systems (Coleman et al. 2016). However, qualitative research (particularly that conducted by the Adelaide Food Values Research Group) has demonstrated that concerns for animal welfare are not necessarily related to the use of specific husbandry practices but instead are associated with animals' quality of life more generally, as well as other issues such as food safety, quality, and taste. For example, Bray and Ankeny (2017) highlight that free-range and cage-free eggs are perceived by Australian consumers as being of better quality, more nutritious, and safer than caged eggs. Although caged egg production was described by participants as being 'cruel,' the desire to purchase free-range eggs was often described as an attempt to avoid industrialised food production, rather than taking a stance on hen welfare. Live export has also been a topic of interest in Australia, particularly relating to concerns for animal welfare during and after the voyage. Buddle, Bray, and Ankeny (2018) found that concerns for live export were related to the conditions which animals were subject to aboard ships.

Media focus attention on animal welfare issues because animal-related stories “sell papers” (Rollin 1995). Previous research has noted (an albeit short-lived) decline in meat consumption following media coverage of farm animal welfare issues (Tonsor and Olynk 2011; McKendree, Croney, and Windmar 2014). Media exposés of animal cruelty have resulted in political action, for example the 2011 temporary suspension of the live cattle export trade from Australia to Indonesia (Tiplady, Walsh, and Phillips 2013), and the more recent retraction of live sheep export licenses from exporters transporting sheep from Australia to the Middle East (Sinclair et al. 2018). In both of these cases, the public’s “ire” was raised “not by persuasive intellectual arguments, but rather by the moral shock of seeing animal suffering on television” (Munro 2015, p. 223). Mummery and Rodan (2017) suggest that activists’ reliance on highly emotive content arises as a result of mainstream media’s tendency to resist reasoned arguments about animal welfare and to present actions in support of animal welfare as intrinsically unreasonable. While studies show how emotive media campaigns can bring activist causes to the attention of wider publics, further work is still needed to understand the conditions under which these types of public engagement become successful. For example, emerging evidence suggests that emotive animal welfare campaigns have little effect on the attitudes of committed meat eaters, who state that they reject animal welfare activism as it is too extreme and a form of ‘slacktivism’ (Buddle, Bray, and Ankeny 2018). Other research suggests that media messages are most effective when they adopt “complementary frames,” that is, when they connect meat reduction messages with other issues that audiences might care about, such as health, and when they use carefully selected “influencers” from across a range of networks to lend credibility and visibility to political messages (Friedlander and Riedy 2018, p. 229).

The critical lessons that can be drawn from the debates over animal welfare, and the associated media coverage and activist attention, are that simply providing more information or education is not sufficient to quell concerns or to rebuild trust, particularly following exposés or coverage of extreme abuses. In addition, the broader community often makes connections between issues that might appear to be loose in a strict logical sense, but which are critical to their understandings of these issues, and hence trust must be built carefully with awareness of these sorts of interconnections.

4.4.2. Agricultural technologies

The application or use of different technologies in agriculture also receive significant public attention, the most notable examples being biotechnology and genetically modified foods (Frewer, Miles, and Marsh 2002; Lockie 2006; Crawley 2007; McCluskey, Kalaitzandonakes, and Swinnen 2016) and the use of antibiotics in agriculture (Morris, Helliwell, and Raman 2016). Similar to debates over animal welfare as described above, correlations have also been drawn between media

exposure and attitudes towards the use of particular agricultural technologies. For example, Marques, Critchley, and Walshe (2014) demonstrated that in years when genetic modification received significant media coverage, Australians were less positive toward the technology.

Genetic modification remains a contentious issue across the world. Its use to create new varieties of crops remains highly regulated, and the potential use of genetic modification in livestock species continues to generate public interest. Daly et al. (2015) state that consumer demands will limit the ability for Australian agriculture to adopt genetic modification technologies, a claim which is supported by a study conducted by Grain Growers (2011) which highlights that the Australian domestic flour and feed millers, who are consumer-driven, believe that genetically modified wheat will remain unacceptable to Australian consumers in the foreseeable future. Research by Kriflik and Yeatman (2009) also highlights a level of ambivalence in public opinions since although participants acknowledged the potential benefits of genetic modification such as an increase in production, they were still concerned about the potential long-term risks. Other research has indicated that there are high levels of consumer support for the labelling of GM food (Dietrich and Schibeci 2003; Lea 2005; Bray and Ankeny 2015).

There are conflicts in the findings produced by various organisations about Australia's attitudes towards GM. Quantitative surveys conducted since 1999 by the former Commonwealth agency Biotechnology Australia (Yann Campbell Hoare Wheeler 1999; Millward Brown 2001, 2003; Eureka Strategic Research 2005, 2007) demonstrate that support for GM food and crops decreased between 1999 and 2005, but increased in 2007 where 73% of respondents claimed to accept GM food crops, although this number fell again in 2010 (Cormick 2011). However, the Swinburne National Technology and Society Monitor indicated that Australians did not feel "comfortable" with GM plants or animals for food at any point between 2003 and 2013 (Marques, Critchley and Walshe 2015). It is difficult to explain these inconsistencies in results, in part because these surveys rely on rather broad questions that do not permit deeper analysis, similar to much of the quantitative research conducted to explore attitudes towards agricultural issues.

Away from survey-based methodologies, there has been some empirical research conducted to explore the underlying attitudes towards GM in Australia. For example, Lockie et al. (2005) used focus groups to inform the shaping of survey questions utilised to explore underlying support or opposition to biotechnology amongst Australian food consumers, finding that although consumers have generally negative attitudes towards biotechnologies, there is significant variability in the direction and strength of these attitudes. Focus-group based research conducted by Bray and Ankeny (2016) into attitudes of Australian women demonstrates they view GM foods as part of a

complex process of making 'good' food decisions, which were interconnected to a range of other factors including whether the food product was local, fresh, convenient, healthy, and nutritious. Ultimately, Bray and Ankeny (2016) argue that food production and consumption is understood and discussed amongst very diverse publics, and that food choices are nearly always multidimensional.

Thus in order to develop an understanding of community trust in the food and fibre sector, and devise a forward plan for research and investment, the case of GM in Australia provides us with some key lessons: first, quantitative research alone is not sufficient to explore the reasons behind people's reactions particularly with regard to emerging technologies. Second, attitudes are extremely variable and can appear at times to be inconsistent; hence more detailed analysis will be required in order to accurately assess the influence of various issues and debates more broadly on the sector as a whole. Finally, viewing the community as one homogenous entity is inaccurate and will be an ineffectual approach when seeking strategies for engaging the public in issues associated with trust in the food and fibre sector: instead, it will be essential to identify and engage with diverse and oftentimes overlapping publics who compose contemporary Australian society.

4.4.3. Environmental impact and sustainability

Many of the issues described above relate to the environmental impact of the production of various commodities. In their report on Australia's agricultural future, Daly et al. (2015) suggest that there will always be a section of the Australian population that will have concerns about the impacts which agricultural practices have on the environment. Witt et al. (2009) describe how the "urban-rural or city-bush divide" has resulted in "Australian farmers [becoming] concerned that urban people are unsympathetic and see them as 'environmental vandals'" (p. 168). However, this study found little evidence of a city-bush divide in relation to the metropolitan views of farmers and rural land management. The urban residents of this study believed that the environment is in poor condition and that farming practices of the time were considered to be unsustainable. Similar findings were presented in a study conducted by Kriflik and Yeatman (2005) where most participants associated a number of environmental issues such as soil degradation, pesticide contamination, and air and water pollution with mass-produced food. Intensive farming was of particular concern as participants described its detrimental impacts on the environment such as salinity, soil erosion, fertiliser and pesticide contamination, and biodiversity loss. Despite efforts to make operations more efficient and sustainable, these data suggest that sections of the Australian public feel agriculture is no longer based on the same shared values that grounded more traditional and small-scale family farming, and that economic drivers have led to a food system aimed at mass production and profit-making that has changed too quickly for risks to be fully assessed.

Sustainability is also of particular concern for the fisheries industry, especially the wild-caught industry. A report produced by the Department of Agriculture (2015) suggest that while fisheries management is not an issue that is top of mind for many Australians, sustainability is of high importance. The Fisheries Research and Development Corporation (Intuitive Solutions 2017) also report that 41% of respondents believe that commercial fishing is sustainable, up from 30% in 2013. In addition, the commercial fishing industry was considered to be less sustainable than other agricultural industries, such as eggs (53% believe it to be sustainable), dairy (40%), beef (46%), and horticulture (45%).

At the heart of the tension between food and fibre production and the environment is the idea that agriculture and arguably forestry production are not considered to be part of 'nature' in Australia in contrast to other countries. Saltzman et al. (2011) suggest that this notion arises because of the relatively short period of time that (European) food and fibre production activities have taken place in Australia and because all species of plants and animals used in agriculture have been introduced. This idea in turn influences environmental management policies, as maintenance of agricultural landscapes is deemed conservation in European contexts but less so in Australia. However, agricultural landscapes contribute to our national identity (Lennon 2011). With continual agricultural change, 'traditional' agricultural landscapes, and our agricultural heritage (e.g., technology and infrastructure from the twentieth century) may be lost unless it is considered a resource worth protecting (Lennon 2011). Productive landscapes, including managed forests and fisheries, need to be repositioned as part of Australia's environment and heritage within the broader agricultural narrative. Hence awareness of the complexity of people's visions and hopes for Australia are an essential part of what must be considered when devising a plan to build, rebuild, and maintain community trust.

4.4.4. Peri-urban agriculture

Increasing rates of food and fibre sector activities in urban and peri-urban areas are likely to be influencing community perceptions and attitudes, as well as levels of trust. Although food and fibre production in Australia has arguably always taken place in urban and peri-urban areas, the need to protect productive land close to cities as urban sprawl continues has become an important aspect of land use policy. In addition, the movement of residential land into peri-urban areas has created new tensions that are likely to be influencing perceptions of food and fibre production.

Peri-urban regions produce almost 25% of Australia's total gross value of agricultural production from less than 3% of the agricultural land base (Houston 2005), a statistic that is unlikely to be broadly known. It also suggests that people living in urban areas are living closer to food and fibre production than they may realise and by what is suggested by discussions of the urban-

rural divide. However, Ives and Kendal (2013) highlight that peri-urban agricultural landscapes are considered by the Australian urban public to be multifunctional systems and are valued for their diverse functions, ranging from aesthetics to nature protection, which are not usually considered when developing land use policies.

Additionally, there is increasing importance being placed on producing food *within* cities also with greater value being placed on green, food-producing spaces within urban areas in recent years. Lyons et al. (2013) argues that a plethora of 'ethical' food movements have emerged in response to the 'food crisis' (i.e., rising global food prices, expansion of biofuels, increasing global hunger, and the growing impacts of climate change), including those involved in urban food production. Some proponents of urban food production oppose conventional agriculture (calling it 'industrial agriculture'). It is unclear how these activities are impacting on perceptions of larger scale food and fibre production: it may be that demonstrating that food production is part of urban landscapes could have a positive effect, but positioning small-scale or boutique production as 'good' in contrast to large-scale production could have negative effects on trust in the broader sector.

Again, this issue points to the need for robust and careful empirical research into the drivers of trust and potential threats to it particularly in the complex spaces which are emerging in contemporary Australia. It also emphasises that we must not make easy assumptions (e.g., about the 'urban-rural divide') that will lead to oversimplified solutions and strategies that are not likely to be sustainable on a medium- and longer-term basis.

5. Engagement and evaluation

5.1. Introduction

The translation of research outputs into outcomes for industry and the community requires considerable effort; however the evidence base for engagement is surprisingly limited. Although there are a number of textbook approaches to stakeholder engagement, and the dissemination of research outcomes to end users, these do not readily offer insights into how to ensure sustainable and effective change.

In this section, we review the current literature on stakeholder engagement and dissemination of research outcomes to end users with particular focus on best practices. Much of this work comes from a broad research area known as “public engagement with research,” a term applied here to disseminating information and knowledge about research (Duncan and Oliver 2017), which is partly driven by the need for research providers to demonstrate the impact of their work in the public domain, especially when using public funds. Unfortunately, public engagement activities tend to be poorly resourced compared to other activities associated with research, and also tend to lack rigor and critical reflection (Facer et al. 2012). There is a growing divide between theory and practice in this domain, and between those who do engagement and those who conduct research on or about engagement and its related issues; what little research is done is spread across a number of fields that often are not in dialogue with one another.

5.2. Key principles for research engagement

The National Co-ordinating Centre for Public Engagement (NCCPE) in the UK (<https://www.publicengagement.ac.uk/>) has developed a number of evidence-based resources to guide public engagement with research across a range of disciplines. Although their focus is on university-based research, the principles articulated by them are applicable to any research provider-end user relationship. They describe the four key principles of engagement as:

- purpose: why are you doing the engagement?
- people: who is involved in the project as participants, partners, or deliverers of the project?
How have you considered their needs and interests in developing your approach?
- process: is the process appropriate to the purpose and people you are engaging with?
- evaluation: have you considered how to use evaluation to both inform your approach, and to assess its value?

Within the context of the current report, the broader purpose of building and maintaining trust in the food and fibre production sector is clear; as such, it is important to involve the sector in the agenda setting processes of the research as well as in the dissemination of research outputs. The nature of the outputs will to some extent determine who within the sector are the likely end users of the research and who is best placed to apply the results of the research as well as which processes for dissemination and engagement are most likely to be effective. Again, the NCCPE outlines a number of different processes for engagement, including presentations, workshops, and social media, and notes the choice of which methods should be used will be determined by both the nature of the research outputs themselves and the end users, for example, a 'ground-level' framework for producers when engaging the community via social media, or a 'high-level' strategy for coordinating industry messaging around the use of shared resources. One consideration that these two examples highlight is that discussions must occur about how 'public' the dissemination should be and whether some degree of confidentiality within industry may be required. Another consideration is it is critical to use processes that take advantage of pre-existing networks and which use formats that are familiar to the end users, while also moving toward more participatory forms of engagement. Participatory forms of engagement such as deliberation have been used to engage the public in food issues (and are reviewed by Ankeny 2016) and could be adapted for use in industry, given that the underlying principle is that engagement must not only inform, consult, and involve, but also promote higher-level processes and enhance participant's understandings of their own values. Evaluation of engagement events is crucial, and is discussed further in section 5.4. below.

5.3. The traditional R, D, and E framework

Australia's primary industries have a long history of translating research findings into outcomes, although formerly publicly-funded extension activities have largely been replaced by the RDCs and their networks (Core 2009). This combination of public and private entities can facilitate the adoption of new technologies and practices (Eastwood et al. 2017) and the extensive networks that already exist provide a pathway for knowledge exchange.

However, in the context of the proposed research program to address community trust in the food and fibre production sector, the utility of the 'traditional' extension pathways is less clear. Extension in this context refers to more than just the provision of information: "Extension focuses on change in more complex environments where the risk of failure is greater and people need to develop the capacity to change" (Asia Pacific Extension Network N.D.). Hence the concepts and tools that form part of extension, as opposed to communication, are more likely to result in the successful

dissemination of research outputs. In this case, however, the 'who' (as in the end-user of the research) and the 'what' (in terms of the research outputs) are yet to be determined, and both will inform how best to disseminate those outputs. It is possible that some of the research outputs will be relevant to individual producers: for example, if there needs to be some reframing of messages on social media, then this information will be of relevance to individual producers that are active on social media, and this knowledge could be brokered through extension networks. Other research may be of more benefit to those responsible for framing messages on behalf of industries, and in this context extension networks may be less important than interactions directly between researchers and industry representatives. However, even in this latter situation, the key principles of extension are important and will need to underpin any dissemination activities. They are also remarkably similar to the principles for public engagement with research (Asia Pacific Extension Network N.D.):

- Partnership;
- Engagement;
- Empowerment;
- Capacity building;
- Technical support;
- Cultural awareness; and
- Utilising local resources.

5.4. Evaluation

Evaluation of engagement is crucial for improving practice, and yet rarely occurs, mainly because of the previously mentioned divide between those who do engagement and those who do research on it. This lack of evaluation is certainly not unique to the food and fibre production sector, as it is also an issue in science communication where there has been some attempt to develop a research agenda (Rowe and Frewer 2004; Grand and Sardo 2017). Rowe and Frewer (2004) outline four reasons for program evaluation:

- financial reasons – to ensure value for money for the program's funders;
- practical reasons – to learn from mistakes and improve the program;
- ethical/moral reasons – to ensure fair representation and transparency as to the purpose of the program and people's involvement; and
- research/theoretical reasons – to increase our knowledge.

Despite these compelling reasons, evaluation is difficult, in part because defining a common idea of *success* or *effectiveness* for all parties involved, including the participants, may be challenging (Rowe and Frewer 2004). However, once the definition of success can be operationalised in some way, standard social science methods (both qualitative and quantitative) can be drawn on to conduct the evaluation, analyse the data, and to draw conclusions and make recommendations that are relevant to the program and stakeholders.

5.5. Conclusion

A lack of evidence base for engagement to disseminate research findings to end users is a problem that is not unique to the food and fibre production sectors. However, the principles of both public engagement with research and more traditional 'extension' can be used to develop strategies for dissemination. Evaluation of these efforts will be crucial, both to address the limited evidence base and build capacity, but to also ensure improvement and refinement of these strategies over time and ensure that the sector benefits from investments in building and maintaining community trust.

6. Conclusion and recommendations

This review has identified that existing research on community trust in Australia's primary industries to be surprisingly limited and remarkably siloed. Existing research focuses disproportionately on agriculture, rather than on the broader food and fibre industries, and it tends to examine industries or issues individually, rather considering cross-sectoral challenges or themes. Scholarly and industry research also tends to rely on quantitative methods such as surveys, rather than on qualitative approaches that enable deeper investigation of key issues which in turn is necessary to support effective strategies to target community trust.

As a result, while there have been some efforts to understand issues of importance to the Australian community (i.e., what the community cares about), there has been surprisingly little investigation of why or how these issues become important. Understanding the *why* and *how* is crucial for identifying cross-sector opportunities for intervention that will allow trust to be maintained, built, and rebuilt in the face of ongoing social and technological change. These critical questions require quantitative research to identify pathways to building trust and qualitative research to explore specific emerging sector-wide issues in detail.

In synthesising the literature and on trust and related concepts, it has become clear that trust involves a number of factors. For the community to believe that those in the industry or sector want to look after the things that they care about, the sector and the community need to have shared values about how food and fibre should be produced. In addition, those in the sector must recognise that they have been entrusted by the community to look after the things that the community cares about and that they have the power to do either good or harm (similar to fiduciary responsibility and responsiveness). For the community to believe that the sector has the abilities to successfully look after the things about which they care, they need to believe that those in the sector are competent and have been responsible in the past.

With this understanding of trust, it becomes clearer how trust may become eroded. However existing research on attitudes and perceptions does not provide detailed or actionable insights on how to strengthen trust. Existing research on community attitudes is inconsistent and oftentimes contradictory in part due to an overreliance on quantitative surveys and consumer sentiment analyses in academic and industry research. These types of studies employ broad questions or simplistic measures that do not permit comprehensive analysis or understanding of the deeper issues affecting community trust. Current controversial issues—such as animal welfare, new

technologies, environmental sustainability, and peri-urban agriculture—offer critical lessons that can be applied on a cross-sectoral basis.

These issues also point to the complex spaces of debate that are emerging in contemporary Australia and to the need for more robust and careful empirical research into the drivers and threats associated with community trust. It is vital to avoid easy assumptions (about the ‘urban-rural divide’ or about the prevalence of ‘knowledge deficits,’ for example) that will lead to oversimplified solutions unlikely to be successful on a medium- and longer-term basis. Research shows that more information, education, and transparency are not likely to be useful solutions: far more complex and nuanced approaches are needed for success.

A lack of evidence base for engagement to disseminate research findings to end users is a problem that is not unique to the food and fibre production sectors. However the principles of both public engagement with research and more traditional extension approaches can be used to develop strategies for dissemination. Evaluation of these efforts will be crucial, both to address the limited evidence base and build capacity, and also to ensure improvement and refinement of these strategies over time and guarantee that the sector will benefit from investments in building and maintaining community trust. Hence any research program designed to investigate trust needs to proceed in an iterative manner with built-in cycles of research, dissemination, and evaluation at the centre of the strategy.

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