



Understanding the relationship between social change and its impacts: The experience of rural land use change in south-eastern Australia

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A B S T R A C T

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This study investigated socio-economic impacts of land use change, giving explicit attention to the relationships between independently observed land use change and associated socio-economic changes, perceived land use change and socio-economic change, attributed cause of change, and experienced impacts of change. Using a case study region in south-east Australia, we examined the impacts of growth in use of land for dairy farming, cropping, blue gum plantations and rural residential development on (i) rural population trends, and (ii) the amount and nature of employment available in the study region. Perceptions and impacts of change were assessed using multiple qualitative and quantitative methods. Results demonstrate that local residents were not always aware of the extent and nature of land use change, and had difficulty attributing social changes and their impacts to the land use changes that underlie them. Furthermore, the felt impacts of land use change appeared dependent on a person's awareness of that change, and on their beliefs about the causes of social change. These findings highlight avenues for theoretical development to better specify the processes by which social change processes are experienced as human impacts. The findings also have implications for land use policy and social impact assessment, illustrating the importance of understanding both perceived and actual social change.

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1. Background

Rural land use is changing rapidly in many parts of the world (Curry et al., 2001; Petit, 2009; Rudel, 2009). While shifts from agricultural to non-agricultural land uses, such as wind farms or reforestation, often attract the greatest public (and academic) attention, the largest land use changes frequently involve a shift from one traditional rural land use to another, such as a shift from grazing to broadacre cropping (Williams, 2011). All types of land use change have the potential to significantly impact rural communities through both positive and negative socio-economic change, often accompanied by social contention and debate (Kruger, 2005; Xu et al., 2007). While policy makers seek to promote positive benefits of rural land use change and reduce any negative impacts, these efforts may be complicated by conflicting views among stakeholders and the general public regarding the

impacts of land use changes (Schirmer, 2007; Wester-Herber, 2004). Understanding the reasons for different views on the impacts of land use change is crucial to developing appropriate responses to community concerns. This paper contributes new insights by comparing independently observed land use change and associated socio-economic changes, with perceptions of those changes, and the impacts of change on the lives of rural people.

Regional land use change is the outcome of many small scale drivers and changes, with decisions made at an individual or property scale influenced by regional, national and global norms, environmental change, policy and market forces (Barr, 2000; Verburg et al., 2008). As such, the extent and impacts of change may be highly variable across even relatively small areas. A shift in what is grown on the land is accompanied by flow-on changes in socio-economic production systems, such as a shift to new forms of land ownership (for example, from the family farm to corporate management), or in the supply chain, for example through intensification of production and resultant change in the nature of farm inputs purchased and utilised (Barr et al., 2005). Regional land use change is often unevenly distributed in spatial terms (Petit, 2009; Verburg et al., 2008). Local and regional variation in rainfall, soil quality, and infrastructure access mean that land use changes may

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be localised to only some parts of a region (Thomas and Sporton, 1997). In addition, many rural regions experience multiple drivers of land use change simultaneously, and the impacts of each depend in part on how different land use change drivers and responses interact (Barr, 2008). This complexity is illustrated by the work of Barr et al. (2005) and Barr (2008) who examined rural land use change in Victoria, Australia. He found a complex mix of interacting forces shaped land use change, including changing terms of trade for agricultural producers forcing them to increase farm size to remain competitive, an ageing farming workforce, increasing demand for high-amenity land by urban residents seeking to shift onto small rural properties, and increasing use of off-farm work by farmers. These and other factors interacted to produce multiple distinct rural landscapes, in each of which a different mix of causative factors resulted in a unique profile of land use change. For example, in production-oriented landscapes, land use change was dominated by amalgamation of farms, expansion of cropping, and population decline. In rural amenity landscapes, by contrast, attractive natural features and accessibility by road networks to larger population centres led to smaller landholding size as 'sea-changers' seeking small rural properties for lifestyle purposes shifted into the areas, and population was more likely to grow. The complexity of rural land use change means that identifying socio-economic impacts of this change can be challenging, requiring methods that are suited to untangling the range of factors at play (Schirmer, 2011b).

Beyond the complexity of land use change itself, those endeavouring to understand socio-economic impacts of rural land use change are further challenged by the different ways people experience impacts of change. This is evident from the work of Vanclay and others (Slootweg et al., 2001; Vanclay, 2002) who argue that to understand the impact of any change one must identify both the social and biophysical changes occurring and the *felt experience*, or impact, of these changes. This approach recognises that an intervention such as a change in land use leads to processes of social change, but that these social change processes do not equate to social impact: instead, the impacts of social change processes will vary for different people depending on their situation. For example, a change in the number of people living in a community may be experienced as a positive impact by some residents and a negative impact by others. This means that understanding and addressing social impacts of land use change is highly complex, as impacts will vary depending on both the nature and extent of land use change and the way people experience the social changes that result from this land use change.

A range of social and psychological factors are likely to influence whether and how social change processes result in particular types of human impact. While the distinction between social change processes and social impacts has been well established, the nature of the relationship between the two has not been examined in detail in literature seeking to conceptualise social impact (for example Vanclay, 2002). Several studies have suggested a range of factors that may influence how a person experiences a social change, indicating a number of avenues by which social change processes result in differing social impacts. Schirmer (2011b) suggested that a person's goals, occupation, or life stage affect how they experience land use change, while Alston (2006) demonstrated how gender influences the experience of drought. A number of authors have pointed to the ways that the values or beliefs a person holds regarding place, rurality or belonging shape the experience of social change (Barlow and Cocklin, 2003; Convery et al., 2005; Devine-Wright, 2009). Others still have considered the influence of community and farmer adaptive responses to change (Ross and McGee, 2006; Vanclay, 2003a).

While a broad range of factors have been identified, the influence of this work on conceptions of social impact is limited: the work is dispersed across diverse fields such as rural sociology, environmental psychology and social impact assessment literature, and there has been limited attempt to synthesise or integrate this work (Ross and McGee, 2006), or to more explicitly identify the pathways between social change processes and experience of impacts arising from them as part of frameworks such as that presented by Slootweg et al. (2001).

In particular, existing models give little attention to the ways that awareness of land use change and attribution of causes of socio-economic changes influence the experienced impacts of land use change. There is good reason to suggest that these factors will make a difference to experienced impact. Some land use changes are more visible than others in a physical or perceptual-social sense (Miller, 2001; Sevenant and Antrop, 2007), and there is evidence that awareness of land use changes is variable. Surveys of residents in rural southwest Victoria found disproportionate awareness of increases in plantations relative to more common forms of land use change such as increased cropping (Williams et al., 2003). Even where there is awareness of land use change, identifying the nature of the social changes that accompany it, and attributing experiences (impacts) to those changes is fraught with difficulty. As noted above, multiple land use changes are often occurring at once; these together with other factors contribute to social change, which in turn is experienced in varying ways by different people. As such, attribution of social change is uncertain; residents may attribute negative or positive experiences to a land use that is not causally associated with the relevant socio-economic change. Despite this, there is little evidence that factors such as awareness and attribution are being considered in social impact assessment. While Slootweg et al. (2001) and Vanclay's (2002) key papers set out a compelling case for the separation of social change processes and social impacts when assessing social impact, they give little attention to how the extent and nature of awareness of social change processes, or the attributions individuals make regarding these processes, might influence a person's felt social impacts.

The accuracy of conceptual frameworks explaining how social changes do and do not lead to human impact has significant practical consequence. Policy makers attempting to assist rural communities in adjusting to land use change must correctly identify causal factors of positive and negative impact if they are to implement effective supportive policy and planning. Social impact assessment is a methodology widely used to understand the social impacts of land use and other changes. Practitioners in this field also require a sound basis for identifying how social impact occurs in rural communities (Ross and McGee, 2006; Vanclay, 2002, 2003b). This paper contributes to this understanding through a detailed examination of the socio-economic impact of rural land use change occurring in a relatively large region in south-eastern Australia. The analysis incorporates explicit consideration and comparison of observed land use change, observed socio-economic change, and experienced impact of land uses in relation to awareness of land use change and attribution of socio-economic change. The study was conducted over a three-year period (2006–2009). Multiple methods were used to explore social change and impacts of change. We focus primarily on two aspects of socio-economic change: changes in population, particularly population decline and turnover; and changes in employment. Past research has indicated significant concern about how land use changes affect local populations and employment opportunities (Berry et al., 1990; Curry et al., 2001; Schirmer, 2000; Williams et al., 2003), and about the social impacts any change in population and jobs may have on those living in the region (Barlow and Cocklin, 2003, p. 509).

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