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Unlikely Alliances in the Battle for Land and Water Security: Unconventional Gas and the Politics of Risk in NSW, Australia

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Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/intechopen.78795>

Abstract

This chapter, drawing on empirical work in New South Wales, discusses the unlikely alliances forming between environmentalists and farmers against the State which seeks to prioritise extractive development over other alternate futures. In response to a rise in land use conflicts, the State government has recently sought to silence criticism by tightening the laws which for decades have allowed citizens to seek merit and judicial review of government decision-making around development and planning issues. This move, made in conjunction with amendments to the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007, has been met with anger and dismay by farmers, environmentalists and concerned citizens alike. Many places that have traditionally been agricultural strongholds now face an uncertain future as strategic planning moves to increase its focus on enabling energy production. Adopting a qualitative case study approach, this chapter highlights the implications of such decision-making by focusing on one rural region where a vastly different discourse and vision of the future is emerging.

Keywords: strategic planning, energy development, risk, place, water and land security

1. Introduction

Changes to traditional land uses can be contentious, increasingly so when paired with the ongoing challenges of climate change and energy security. In Australia, land use change has a long history as management of landscapes has occupied a central position in our politics ever since re-settlement of the continent over 230 years ago ([1], p. 1). Historically, the agricultural, manufacturing, service and mining sectors have long operated alongside one another to

underpin the economic diversity of the nation with rural regions more specifically playing a vital part [2]. Over time, however, as power has devolved from the Federal government to the States, management of the biophysical environment—land, soils and water in particular have taken on greater significance as increased ‘scarcity’ created by human induced pressures, has become more widely recognised and communities have begun to demand more active responses from government to address these challenges.

In an attempt to ‘balance’ strong economic growth with protection of agricultural lands, the New South Wales (NSW) State government in 2012 introduced strategic land use plans for the Upper Hunter and New England regions [3, 4]. While these were designed to promote ‘co-existence’ of diverse land uses, they also set in place long-term strategic goals which focused heavily on increasing the spatial dimensions and needs of energy industries.

For example, in the Upper Hunter and New England regions alone, 11 Petroleum Exploration Licences (PELS) mainly for coal seam gas (CSG, referred to elsewhere ‘as coal-bed methane’) have been issued, covering a total of 461,000 ha of prime agricultural land [5] (**Figure 1**). This total does not include the minerals titles that also exist in these regions and elsewhere which cover approximately two-thirds of the State.

The increased emphasis on extractive land uses (other than those agricultural in nature) has been met with widespread opposition from farmers, local communities, environmentalists and concerned others, who over the past 5 years in particular have responded with resistance

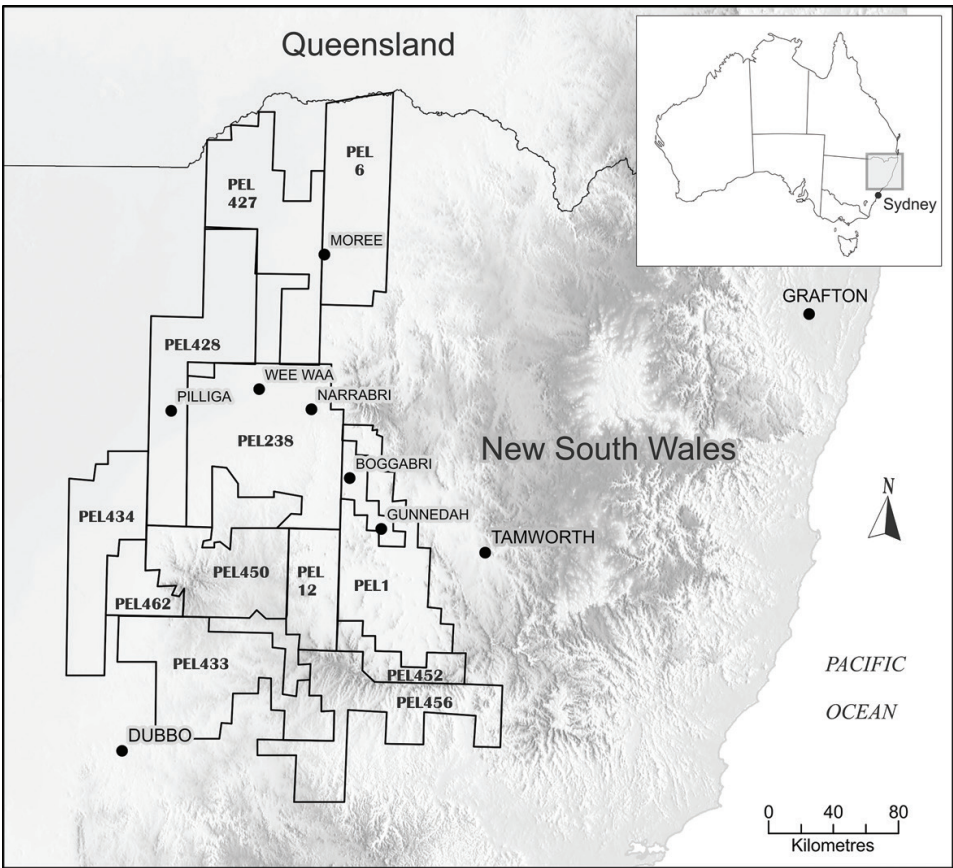


Figure 1. Upper hunter and New England region PEL zones.

in the form of civil disobedience campaigns and blockades. While these campaigns have been mostly against the placement of extractive projects in areas considered to be culturally, ecologically and agriculturally important, they also speak to a larger debate currently being waged throughout Australia [6]. This debate, seeks unproblematically to frame the future of rural places as essential nodes in an ever-expanding fossil fuelled pipeline where economic imperatives drive and surpass all other values that are not seen as being in the 'common' or 'economic good' of the nation [7, 8]. As Peck and Tickell ([9], p. 383) suggest, key to this argument is an all "pervasive metalogic" that draws on appropriate policies to justify its reasoning and effectively silence or marginalise other alternate voices.

This chapter focuses on one rural region in NSW. It reports on the emergence of an unlikely alliance forming between farmers, environmentalists and concerned others in the fight to protect productive land, soil and water from unwanted land use change. Framed by de Rijke ([10], p. 41) as the advent of "agri-gas fields", the chapter considers how the socio-economic and cultural boundaries between place and matter are being contested within the different visions that exist for the region's long-term future. Beginning with an overview of strategic planning in NSW and recent changes to appeal rights, the chapter also contemplates how space is instrumentalised by government for political purposes [11] and how it can also be used by others to challenge and reframe the arena of decision-making.

2. Strategic land use planning and change

When the NSW State government first released its Strategic Regional Land Use Plans, they were heralded as a suite of law reforms which would address what the government itself saw as flaws in the planning process [12]. These plans were to represent the 'government's proposed framework to support growth, protect the environment and respond to competing land uses, while [also] preserving key regional values over the next 20 years " ([3], p. 8). Framed as a way to ensure that land identified as 'Strategic Agricultural Land' – i.e. – highly productive land requiring extra protection mechanisms, the government put in place what it called a 'Gateway Assessment process' [3, 4]. It also appointed a Gateway Assessment Panel of experts (GAP), who would assess the merits of 'State Significant' mining and coal seam gas proposals on strategic agricultural land and then issue a certificate of approval [13].

While the Gateway Assessment process was to mark a significant improvement on previous planning efforts in regional NSW, it did not, however, redress the imbalance between the State's perceived economic 'needs' and the social and environmental needs of specific rural regions [12]. In fact, the Strategic Regional Land Use Plans (which were later to become policy) further entrenched this imbalance by rendering it impossible for the GAP to refuse an application for a Gateway Certificate no matter how questionable the project [12, 14].

Under the Gateway process, the GAP is required to make an upfront assessment of the impacts of a mining/CSG proposal on agricultural activities and water sources. On what basis, however, can this assessment be undertaken if the impacts are cumulative or as of yet unknown [12, 14, 15]? Since CSG mining is still a relatively new industry in Australia, it is possible that

the impacts from mining and fracking activities may not only be site specific, but could also potentially affect a greater proportion of a region than initially considered ([16], p. 12).

In an attempt to further assuage these concerns, the NSW government introduced an 'Aquifer Interference Policy' in 2013 [17]. This was seen as 'a key plank' to the Strategic Regional Land Use Policy (SRLUP), but it was essentially left to the Minister for Planning to provide appropriate advice to the GAP on the potential impacts on aquifers from mining, CSG extraction, exploration and other activities based on the minimal impact considerations set out by the Aquifer Interference Policy [17]. There was nothing put in place, however, to either ensure the quality of aquifers and groundwater after CSG activities had occurred, nor penalties or fines for operators if damage was deemed to have been committed. This was seen by many to be a major flaw in the policy suite and did little to quell community disquiet. Other methods employed by government to try to reduce community objections are discussed below in the other sub-sections of this chapter.

2.1. Property law, 'co-existence' and citizen rights

In NSW (like the rest of Australia, and in the UK), all land or 'property' is assumed to be owned by or leased from the crown (or the State) [18]. This control of land tenure also extends to 'free-hold' titles where private ownership is not absolute, with the crown's representatives empowered to withhold certain rights, such as the right to any mineral or petroleum source found on or under the land [19]. It is the prevalence of this ancient paradigm of property rights transcribed onto modern law, that thus allows all land to be viewed as a commodity, as something "fungible, [and] infinitely tradeable" ([8], p. 6). This regime by its very nature is designed to separate people from place and to valorise the material or physical realm as something separate and 'other' to human subjectivity. It is this legacy that provides modern governments with the power not only to licence State intervention in land use practices such as establishing energy infrastructure, but also to determine the path this intervention will take.

As suggested at the start of Section 2, the NSW government through the SRLUP sought to balance land use and promote what it refers to as 'co-existence'. It suggests that: 'agriculture and mining are both vital industries in NSW and share many common beliefs and interests' [20]. It does not attempt to state what these are, only to suggest further that "the successful coexistence of these industries has enormous benefits for the state, particularly in regional areas" [20]. It also makes it very clear, that "although landholders may own the land, most mineral resources in NSW are owned by the state. This means that the royalties and economic benefits from the mining of these resources contribute to the provision of services for the people of NSW" [20]. To ensure the unimpeded continuity of what it calls "the orderly search for minerals"¹, the government has also recently altered how it approves the development of these resources [20].

Under the 2018 amendments to NSW *Environmental Planning and Assessment Act 1979*, all mining and gas operations are to be classified as 'State Significant Development' (SSD). Under this classification, an Independent Planning Commission (IPC) becomes the consent authority instead of the Minister for Planning, especially when there is significant community opposition. Under this guise, once there have been 25 or more public objections to a project

¹The NSW government includes gas (tight, shale, coal seam, off-shore) and petroleum under its definition of 'minerals' on this site.

application, the IPC can call a public hearing [21]. This is seen by government as a way to build the community's confidence and trust in the Commission's independence by ensuring that assessment and land use planning processes are open and transparent, even though it is the Minister who chooses the make-up of the Commission [21].

While this is considered by some as a way to depoliticise the planning system, in effect it can actually further reduce the rights of the citizen public by closing off avenues to test the legitimacy of decision-making. For example, once a public hearing has been called, this effectively rules out any further questioning of the process or outcome in the Land and Environment Court of NSW where previously, merit and judicial review of planning decisions could be taken for further scrutiny. This essentially means that any matters raised at the public hearing that citizens feel are not dealt with satisfactorily or fairly, can no longer be responded to by the courts; thus removing the only external review mechanism for State government decision-making.

2.2. Exclusion zones, protection and ongoing contestation

While the SRLUP has been heavily critiqued by many, one large alteration made to it in 2013/2014 to try to address community concerns was the introduction of 'exclusion zones'. These zones effectively made areas of the State 'off-limits' to CSG exploration and mining. This was considered to be a much needed addition to the policy to provide certainty for CSG operators and communities alike.

When the list of exclusion zones was announced, however, it was met with mixed emotions. In urban areas of the State where existing residential suburbs were present, as well as in the North West and South West 'Growth Centres' of the State's capital – Sydney, protection from CSG exploration was guaranteed by the government [22]. In the rural regions of the State, however, it was a vastly different story. While the government introduced CSG exclusion zones for seven rural villages across NSW, and the equine and viticulture critical industry clusters of the Upper Hunter region, it did not choose to protect the agricultural areas of the New England region (and other similar regions throughout the state) [22]. This is despite it identifying in its own 'New England North West Regional Plan' that 'the New England North West is one of Australia's most productive agricultural areas' and that the "gross value of agricultural commodities produced in the region for 2016 was worth \$2.1 billion" ([23], p. 4).

For many, this lack of protection was seen as continued evidence of an urban/rural (policy) divide where decisions are made at a distance by city-centric government officials who often have little comprehension of their impact locally [2]. In the New England region where the case study (to follow) is located, this and the idea of the urban/rural divide is reinforced through the concept of 'the Sandstone Curtain' [2]. This metaphor is used by many to describe the physical barrier of the Great Dividing (mountain) Range which splits NSW in two with many rural regions located over the range to the west and the urban areas located on the coast and surrounds to the east.

Overall, it is no exaggeration to suggest that changing land uses and increased government support of the extractives sector has been largely responsible for the rising discontent that can be found in many communities throughout rural NSW today. This in conjunction with changes to planning legislation and withdrawal of the right to seek merit and judicial review of most government planning decisions, has essentially been behind the rise in activism over the past few years and the appearance of new mergers between traditionally old

foes—farmers and environmentalists. More than this though, the government’s framing of its decision-making as in the ‘public’s economic interest’ has led many to question its wisdom and to turn the debate into one about protectionism versus globalised trade. As influential Australian commentator Alan Jones has noted:

“This is not just a battle about mining prime farm land or destroying fresh water or covering our land with salt or risking public health. This is about something far more damaging and dangerous: the loss of our rights as Australian citizens, the loss of basic freedoms we have always taken for granted. State and federal governments have conspired to remove our rights over the ownership of our land. They have deliberately conspired to bully, to abuse, and to force Australians into court if they don’t comply with the demands of foreign-owned multinational mining companies” [24].

Jones’s comments echo the concerns of many, not just local communities, as they speak to larger issues such as loss of place, the demise of rural landscapes, environments being eroded and overall, rural places beginning to represent what Murton has referred to as ‘the countryside under construction’ ([25], p. 1). With extractive industries and their associated infrastructure playing a large role in this transformation, it is worth acknowledging that ‘there are deeply emotional ramifications [associated with] resource extraction’ ([26], p. 1).

As Urry ([27], p. 77) notes further, whether we wish to acknowledge it or not, ‘emotions are intimately tied to place “and as such, places are prompts for often intense feelings, springboards for memories and motivators for action. Acknowledging this, is essential if serious attempts are to be made to resolve some of the more contentious issues surrounding changing land uses today. As regional planners such as Godschalk ([28], p. 5) suggest:

Twenty-first century land use planning faces both an opportunity and a threat. On the one hand, it is widely counted on and expected to deliver both sustainable development and livable communities. On the other hand, it must cope with serious conflicts in the values related to these two beguiling visions, which represent the big visionary ideas of contemporary... planning. The future of land use planning may well depend on how it resolves these conflicts and creates settlement patterns that are both livable and sustainable. [Italics in original].

In Narrabri Shire, where the focus of this chapter now shifts (**Figure 1**), government, industry and civil society have all been drawn into a conversation around land use change and the differing visions for the region’s long-term future. Why and how this manifests itself on the ground is discussed further in Section 3.

3. Introducing—Narrabri Shire

Narrabri Shire, in the New England North West region is one of many local government areas undergoing land use change as parts of the region re-orientate towards extractive activities [2]. Traditionally, Narrabri has been a ‘dryland farming²’ region but its history has not been a static

²Dryland farming systems in Australia combine a rotation of crops, pastures and often livestock. Fallow periods are used to allow soil recovery and account for limited water supply. Australian farmers frequently have to contend with the effects of drought. In Narrabri Shire, wheat, sun flowers, canola and cotton are the dominant crops. In response to ongoing water and soil quality concerns and an increased need for sustainability, much of the cotton industry in the 2000s moved to dryland GM cotton which has greater drought tolerance.

one. Over the past 50 years, it has experienced significant land use change including the introduction of the cotton industry and then later, the advent of genetically modified (GM) cotton. Whilst these developments generated considerable concern in the community at the time, it is the more recent expansion of coal mining and CSG development in the Shire that has engendered the most conflict [2, 6]. Disputes have emerged between those who ultimately see extractive industries facilitating economic growth and diversity, and those who see these activities as a threat to the core agricultural functions upon which Narrabri Shire was founded back in 1848 [2, 6].

The research this chapter discusses, is a sample of the findings from a collaborative study carried out in Narrabri shire in 2015–2016. Narrabri shire consists of 8 towns (including Boggabri, Narrabri, Pilliga and Wee Waa—**Figure 1**), with a total—population of approximately 14,000 residents. The research used qualitative methods that set out to explore the lived experiences of individuals and community in regards to changing land use patterns. It included voluntary, face-to-face interviews with a mix of rural, village and Narrabri town residents [30]. **Figure 2** outlines the methods used for sampling and recruitment of participants.

Ultimately, Narrabri shire was chosen for this study due to its history of significant land use change, the intensification of coal mining and the emergence of CSG interests that are seen to currently challenge the traditional agricultural base of the community ([6], p. 103). Narrabri also presented an opportunity to explore the changing nature of land use contestation and the formation of new allegiances due to the fact that recent civil disobedience campaigns against energy company ‘Santos’ were situated there ([6], p. 103). These campaigns garnered nationwide attention as environmentalists from across Australia joined local farmers and community groups to protest against what they perceived as an unsustainable and undesirable land use change. Consequently, Narrabri shire presented a unique lens through which to explore the intricacies and complexities that exist around land use change today [2, 6, 31].

This chapter highlights several themes to emerge from this research. These are represented below under Sections 3 and 4. Overall, these articulations represent the values, perceptions,

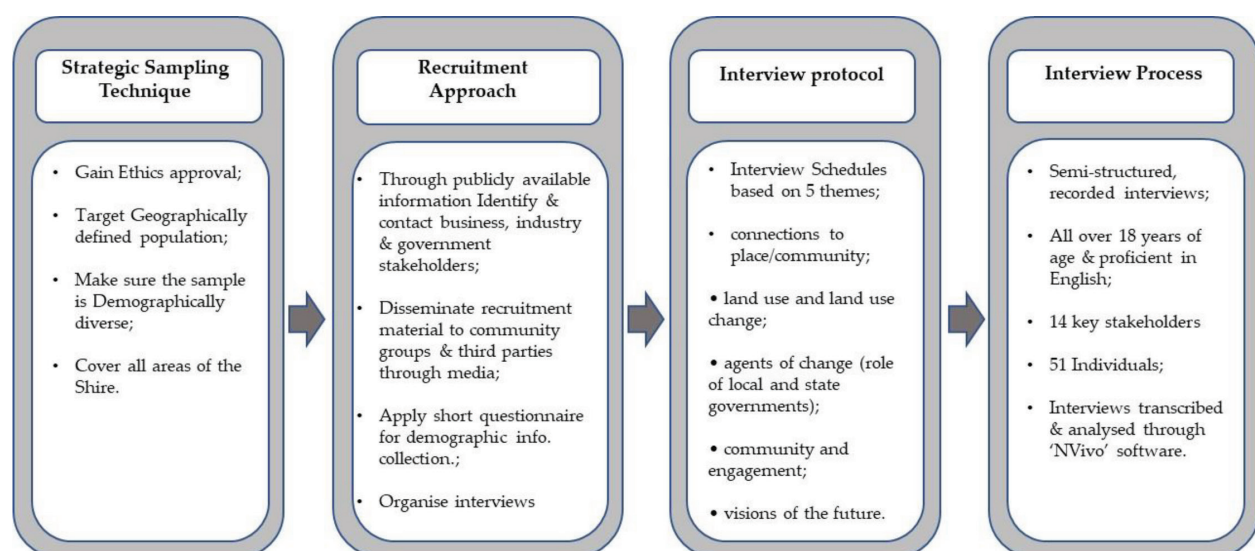


Figure 2. The methodological approach.

aspirations and anxieties that form part of understanding what it is to live in rural places in NSW today.

3.1. Competing for water

In all parts of Australia, access to water is problematic as the continent is one of the most arid on Earth and as such, the availability of its water sources places a fundamental limit on how and where the population can live and work. Likewise, how water is used and thought about is key to our understanding of issues intimately connected with it, such as: access, management and ongoing protection of this limited resource. This is particularly important when considering fresh water sources, ‘because the continent has so little of [them], particularly surface flows, and the small amount [Australia does have are] poorly distributed to meet human needs, both spatially and temporally’ ([29], p. 422). As such, ‘matching supply to demand, geographically and temporally, is a major problem in Australia’ ([29], p. 432).

Most participants in this study recognised the value of water in all its forms and the desire to avoid contamination of fresh water sources was thought to be paramount. As a region, Narrabri has had a long history of debilitating droughts, the most recent, having only broken in late 2015 ([6], p. 108). As such, people have long memories and their experiences of continuous drought cycles have clearly influenced their concerns about availability of water and their fear of its loss. As Michael, a local manager in Narrabri shire poignantly noted: ‘the water issue is really the touchstone here’ ([6], p. 108). This is particularly apparent when participants spoke of the region’s relationship with the Great Artesian Basin.

3.2. The great Artesian Basin and continued ecological health

The Great Artesian Basin (GAB) is one of the largest underground water reservoirs in the world. Occupying more than 1.7 million square kilometres beneath the arid and semi-arid parts of Queensland, New South Wales, South Australia and the Northern Territory, it is an essential fresh water source for many inland communities and ecosystems throughout the continent [31]. In Narrabri shire, water is considered a ‘life-giving’ force but it is also recognised as fragile and easily diminished through over-use, increased competition and the ongoing effects of climate change. It is also considered an integral part of what Narrabri is, and so is strongly linked with issues around identity and place ([6], pp. 107–108); [31].

In Narrabri, the GAB is particularly valued and many participants in this study expressed great concern that governments appeared to be putting this essential resource at risk. According to the National Water Commission [32], planned CSG development in eastern Australia will at full operation, withdraw more than 300 gigalitres of groundwater annually from the GAB, i.e. more than 60% of total allowable withdrawals including those of locals in Narrabri shire. Expressing her concerns about this, Anne Kennedy [2, 6], a sixth-generation farmer in the Shire, sums up the vital role of the GAB by stating that:

the Great Artesian Basin is our lifeblood, and if we lose our groundwater, we simply cannot exist here. Not just the farmers, but communities, towns, vast areas of inland Australia will be uninhabitable. It is our only permanent water supply.

Confirming this further, Dylan, a local farmer also suggested that:

no other place has got a big pool of water, millions of gigalitres of water underneath the ground. And... that's been the backbone of the grazing industry for decades. Now if that gets depleted... the worst case scenario is that it will be the death of the grazing industry in Australia.

The continued health of the GAB was also linked with ideas about continued agricultural and human health more broadly. Many participants in this study, like Dylan above expressed a fear that the potential impacts from new hydro-carbon activities, such as those associated with CSG, might pollute shared water resources and if this were to occur, as local consultant Richard succinctly noted; 'without water, you've got nothing' [2].

3.3. Risk

In Narrabri shire, the perceptions of risk and uncertainty were particularly heightened when these issues were associated with questions about the region's long-term viability. As John from the cotton industry suggested ([6], p. 109):

...access to ground water is what drives the economy here. It provides a baseline or a foundation for the agricultural economy. A lot of the water is taken from other systems but the ground water is the backup, it's the foundation. If anything goes wrong...

The possibility of 'things going wrong' was ever present in the minds of many participants in this study ([6], p. 109). Often referring to the idea of long-term 'sustainability', participants suggested that the 'precautionary principle'³ should be being applied by governments much more readily than it was. This sense is described by authors such as Beck as the 'materiality of risk', where doubts and concerns are connected with the 'sweeping influence of science and technological change "particularly that associated in new and/or historical industries such as mining, energy production and so on ([33], pp. 4–5). He claims that perceptions of risk associated with these industries, also 'draw attention to the limited controllability "and uncertainty associated with any new or untested techniques or developments utilised ([33], p. 6). In Narrabri shire, the idea of risk and uncertainty may be visualised most clearly through the anxiety expressed about potential fracking operations and toxic by-products that may arise from CSG operations. As Oliver, a local councillor and farm owner noted:

So [what happens] if any water ponds ...become toxic? Drilling can sometimes flip it back into our aquifer system and that's very dangerous. I think we haven't got enough scientific evidence to prove that what I'm suggesting won't happen. That's how it is with this industry, the worst case scenario is that it will destroy the agricultural industry and put the grazing industry at risk.

This lack of certainty around the integrity of infrastructure, would appear to also be strongly connected with the idea of how water (both fresh and discharged) is currently being managed and how it is to be managed to avoid potential contamination into the future and in relation to possible flood or high rainfall events. Both government [34] and academic literature also support this finding with authors such as Mercer, de Rijke and Dressler suggesting that

³The 'Precautionary Principle' is a key component of Sustainable Development and environmental legislation throughout Australia. All users of land, are required to assess risk and carefully "evaluate to avoid, wherever practicable, serious or irreversible damage to the environment" [38].

'the impact on water supplies from the mass dewatering of coal seams and the subsequent disposal of saline water are among the strongest concerns people have about unconventional gas extraction' ([7], p. 280).

Echoing this finding, Michael, a local manager suggests:

...there's the Leewood or the holding ponds, you know...they're developing out there on [the] flood plain, [but] if there's a major flood during production and the ponds are full, ...then what? You know there's quite a lot of risk. And I'm actually not opposed to gas out in the middle of the desert, or natural gas or mining per se, but this is just something we do not want in this area. There's too much value... it's like this is our irrigation water, our stock water, our drinking water.

This concern was also linked more generally to scepticism about the burgeoning industry and the feeling of not being told the truth as expressed by Malcolm, a local farmer, who notes:

If there was no risk (and we know there's a risk), the companies would guarantee it [but] it's never going to happen. I've asked them; they won't do it. If it was all good, we wouldn't have this dissent. The dissent is enormous; and not just in Narrabri.

3.4. Food and soil security

At the heart of the debates occurring in Narrabri, is also the recognition of how resource 'scarcities', and water, energy, food and fibre are all interconnected in a web of complex relations [2, 6]. As climate change and other pressures increase, continuing to meet food production and consumption is going to become increasingly challenging. Many farmers and the community in Narrabri acknowledged this and it should not be surprising that the idea of protecting healthy soils not only in this region but Australia-wide was seen as a critical and enduring task.

The ongoing notion of the need to protect soil security in the face of land use change and increasing climate variability has also been expressed federally in the Australian National Soil Research, Development and Extension Strategy [34]. It is noted in this strategy and by Koch et al. [35] that: 'securing soil as a contribution to the current and future competitiveness of Australian agriculture "is essential because "it is estimated that water erosion is now outstripping soil formation rates across Australia by a factor of several hundred and in some areas, several thousand "and as a result, soil quality is reducing significantly.

This concern is echoed by Murray an inland farmer who commented in regards to mining:

'You know [we're] dealing with some of the best soils in the country [here], like these black soil plains [which] don't make up very much of Australia... less than 1% probably. If they could prove to me that it wasn't going to affect anything in the future, I wouldn't worry about it too much. But my biggest worry is you know, once they dig it up, it's gone...'

Likewise Bryce, another farmer suggested that:

The type of country [we're] talking about, it's genuine, high-production, high-value country... There might be something underneath it, but God forbid we ever start digging up that sort of country.

As Caitlin, another large producer notes:

...this is about those things that are priceless. It's about clean air, clean water, and land to grow clean healthy food. I can't impress upon you enough the importance to the State and the nation as a whole of our food producing lands. We have them here, they're clean and green and we produce [a] great product, and to put that at risk...

For some members of the community, there was little differentiation made between the potential effects of coal mining or CSG as land use types, and while some community members were not against either, the caveat was always that both could proceed as long as they did not have an impact on soil quality or its future security [2, 6]. As Michael, a local manager notes when asked about his perceptions of people's main concerns:

Well there are...people [making a] living from that land, but it's such fertile soil and it will be productive forever if it's well looked after. But if that land gets ruined by mines, how can we grow food there?

As Tania, a local sheep farmer notes:

I've never been opposed to coal seam gas...[or] to coal mining, I've always said, and it's on record that 'You can go ahead with your mining, provided it's done with respect. And there's respect to the environment, respect to the laws of the land and respect of the people in the area where you're operating'.

It is this perceived lack of respect, however, that has some in the community like William, an agricultural supplier, ready to protest:

You start digging up the Liverpool plains, I'll be the first bloke standing there with a placard. Because it's just unbelievable that we would even think about doing that... In a hundred years' time, people are still going to need to eat some form of sustenance, and at this point in time I can't see that sustenance coming from anything other than the dirt. And we've got some of the best dirt in the world within 200 kilometres of Narrabri. It's that simple.

Carl, a retired farmer sums up the general feeling of many by suggesting that: 'it's the farmers; it's always the little people that get hurt. I am not doing [this] for my benefit. This is for the next generations'. Likewise, as Bryce, another farmer suggests:

...for a lot of people, this is the first time in their life they [have felt] passionate about something, and [want to] stand up... they've never had to do this before. They've never felt threatened or have never gone through this process.

Overall, what these comments signify is that the nexus between water, soil and food security is widely recognised within the community, as is the connection between stewardship (offered by farmers) and decision-making around land use. The ongoing health of water and soils is stressed as something that is non-negotiable [2, 6]. This is made more apparent when one considers how these land use changes have been met with resistance often from unexpected quarters.

4. Activism and the rise of unlikely alliances

Becoming 'politicised' as Bryce suggests above, is for some an entirely new position in which they find themselves. Many have never protested before, nor felt compelled to stand up and

resist the actions of government, until now. In Narrabri shire, unlikely alliances between farmers, environmentalists and concerned others have formed to respond against what people see as undesirable and unsustainable land use practices being imposed upon them. Many perceive that actions taken by industry and inaction by government has allowed social and environmental injustices to be imposed by the State upon communities [6].

Responding to the perceived absence of protection by government, farmers and environmental groups have been drawn together through their experience of what has been framed as 'an antagonistic other', that is, an external force embedded in extractive activities that threatens their individual and collective well-being [2, 6]. On one side of the argument, farmers are concerned that minerals and gas extraction may adversely affect their agricultural pursuits through negative impacts on the environment and, subsequently, impact the lifestyles and well-being of their local communities, local amenity and sense of place ([6], p. 112). On the other side, environmental groups and concerned others are anxious to promote sustainable development, to reduce the human footprint on nature, and to promote alternative and clean energy sources [6]. While traditionally, these values have been quite divergent, in the face of a common antagonist, a sense of collective identity has emerged underpinned by an evolved notion of stewardship, of caring for the land and conserving the environment for future generations [2, 6, 31]. Thus, an interplay between the informal and formal political spaces has emerged. Exemplifying the growing relationship between farmers and those they see as 'like-minded others', Dana a farmer's wife, explains how farming activists, through their association with "greenies" have acquired a sense of support and legitimisation in their opposition to CSG operators seeking access to their land:

Right now, all [farmers] perceive is that: "you're going to take away my life, full stop. So, I don't want to hear what you've got to say. You're going to destroy everything I've worked for. I've got every greenie up a tree who's going to back me up, so whatever you've got to say, I don't care".

Comments like these, help explain how shared common values have become a springboard for collaboration and under this banner, how historical differences have been able to be set aside.

4.1. Temporality and alternate visions of the future

The idea of temporality was referred to many times throughout this research particularly in regard to extractive industries. This issue is important because it is connected with changing social relationships with the material world and as such, it also reflects ongoing power struggles. Mines and extractive industries are being understood as more than spatial features of the landscape and as such, are intertwined with and against past memories, present experiences and future visions. It is only when these temporal factors are compared, however, against different land use visions such as those we find in Narrabri shire, that we begin to acknowledge how perceptions and understandings of temporal dimensions can become grounds for contestation and dispute.

Recent research conducted by Chen and Randall ([36], p. 17) suggests that while the short-term economic benefits of extractive industries are generally orders of magnitude greater than those of agriculture, in regards to the long-term economic net benefits from agriculture, these tend to exceed those of CSG extraction and/or mixed use (i.e. agriculture and CSG

coexistence). This recognition seemed to figure in many conversations with local people who suggested that land use change had been forced upon them and the long-term economic benefits of this was not immediately apparent. For example, as Carl, a retired famer suggests:

If the farming industry kind of grows, it evolves slowly over the years... but these industries that we've got coming in now, have been forced upon us. It's not something that the community really has had any input into at all.

In terms of the influence of CSG on farming land, what many farmers expressed concern about was the footprint of operations. As Malcolm, a large farmer in the Shire notes:

As far as the coal seam gas is concerned, there's no doubt regardless of what the mining companies or gas companies say, you've got fields and you've got gas bores in them and they've got roads and pipes and everything. It completely changes the farming programme. Of course, it's a 'no-no' as far as irrigated land [is] concerned.

In relation to the exporting of coal from the region, Olivier, a local councillor noted that there also seemed to be competition for rail infrastructure occurring and that this was also causing disputes locally:

...That's another thing, coal has taken precedence over wheat being moved, and in the middle of a harvest, shifting wheat in a hurry is a big thing. [It's] on a single line track; you can only get x amount of cartage on some trains. So, it's a big thing. The shipping of coal is competing against the shipping of wheat or grain out here.

In terms of the sustainability of this situation and the changes the community has had to weather, comments from Caitlin, a large producer, re-echo the idea of the urban/rural divide:

[I have to ask] - Are we the guinea pigs? Are our families second class citizens? I have heard that the NSW government has bought back CSG licences in the Sydney Basin citing protection of community and protection of water resources as the reason behind this. Why are the residents of Sydney's health protected but we out here in the Narrabri shire neglected? Aren't we deserving of the same protections?

In terms of visions for the future, almost all of the visions discussed by participants remained firmly situated in agriculture. This was connected with the fact that farmers today, as mentioned above, see themselves very much as stewards caring for the land. In their mind therefore, in terms of temporality, agriculture has proved it is a stalwart that can be maintained long into the future [2, 6]. As Caitlin, notes further:

The bottom line is, agriculture will be here in a hundred years' time. Mining won't be, but agriculture will only be here if we do it sustainably. We've got to be very careful; we can't just keep raping and pillaging and plundering the country from an agricultural perspective. We've got to stop using chemical fertilisers, and we've got to genuinely start to look at the biological renewal of our soil. 90% of the growers I deal with agree with that sentiment... We're very fortunate in this region, we're one of the few regions in the country... [where] we're blessed with a beautiful mix of an ideal climate, soils and clean water resources, and we can grow two crops a year here. Very, very few places in the country can do that.

The guiding principle that we run our business by, [is] that we are effectively borrowing this land from our children, whether that be our own children or just future generations, and we're very mindful of that. With any borrowing, comes interest, and in terms of the interest in this particular case, whilst we own that land in a legal sense, we're borrowing it, and the interest we have to pay is to return that land, or pass that on to the next generation, in a better way than we found it.

Echoing this and the future of agriculture, Keith, a local farmer notes:

The thing is we've been in agriculture for six generations. The last thing I'm ever going to do is to be turned onto another industry that has no future. Even if it had a 30-year future here, that's not the sort of future that you can then hand over to your grandchildren and their children.

As researchers Langridge et al. ([37], p. 4) suggest overall though, while there is public support nationally for agriculture, it is science and technology that will assist farmers in changing the face of farming and ensuring its long term sustainability. In their opinion ([37], p. 1), 'agriculture today is a very sophisticated and highly technical industry, and in Australia it has been one of our most innovative and efficient industries "which has allowed us to meet 'our moral commitment to food security in the region". To ensure that this continues to happen, they suggest that a combination of old knowledge and new is needed and that modern farmers, will need for example:

the traditional knowledge of cropping systems, fertiliser regimes, field pathology and so on but will also need to know techniques for assessing crop health based on analysis of the light reflected from crops and captured on images generated from drones or satellites. In the future, farmers will also be capturing data from even more diverse sources, linking this to genetic information and predictive climate models and using the result to help them decide when to sow their crops, when to apply fertilisers, how to protect crops from disease and when to harvest ([37], p. 4).

Preparing for this brave new world, is deemed essential as 'food security is inextricably linked to the political stability of our region "and that of others globally ([37], p. 2).

5. Conclusion

As this chapter has shown, changes to traditional land uses can be contentious, none more so, than when differing visions exist for a region's future. In the NSW shire of Narrabri, land use change has been occurring for some time, although garnering the most attention has been the more recent arrival of coal seam gas development. This, in conjunction with the approval of large coal mines in an area which prides itself on its agricultural heritage, State forests, and National parks, has been met by many with anger and disbelief. These emotions have translated into ongoing acts of resistance including blockades and civil disobedience campaigns by farmers, environmentalists and concerned citizens, who traditionally have been the most unlikely of allies. Much of this conflict could have been avoided, however, if the State had moved to protect vital water sources and productive lands through the creation of exclusion zones in the New England North West as it did elsewhere. Likewise, if its' policy 'reforms' had not effectively disempowered local communities, by disallowing those affected by its strategic planning decisions to seek merit or judicial review, it might not have found itself in the position it does today. Instead, by promoting the economic imperative as the only measure of 'worth', the State has effectively signalled that it considers 'the rural' as merely a geographic location; a ubiquitous space ripe for development of energy's spatial project. Given this, confrontation by those articulating a different vision for the future, is as inevitable as it is predictable for land use change forced upon people, is rarely welcome or sought. Therefore, if the State wishes its citizens to be receptive to change, it needs to find an appropriate way

to engage with their concerns and to offer them a valuable stake in the decisions made. Only then, might there be a real chance for 'co-existence'.

Acknowledgements

The author wishes to sincerely thank all of the residents of Narrabri shire who participated in this research project. This research received ethics clearance from the University of Newcastle's Human Research Ethics Committee (Approval No. H-2015-0193) before recruitment of participants took place. All quotations from participants used throughout the chapter are with permission; though the participants have been de-identified.

Many thanks also to Olivier Rey-Lescure, cartographer at the University of Newcastle, who provided mapping assistance for this chapter.

Conflict of interest

No potential conflict of interest is reported by the author.

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