

AUSTRALIAN RANGELAND FUTURES: TIME NOW FOR SYSTEMIC RESPONSES TO INTERCONNECTED CHALLENGES¹

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ABSTRACT: Australia's rangelands contain wildlands, relatively intact biodiversity, widespread Indigenous cultures, and pastoral and mining industries, all set in past and present events and mythologies. The nature of risks and threats to these rangelands is increasingly global and systemic. Future policy frameworks must acknowledge this and act accordingly. This paper collates current key information on land tenures and land uses, people and domestic livestock in Australian rangelands, and discusses five perspectives on how the rangelands are changing, in order to inform the development of integrated policy — climate and environmental change; the southern rangelands; the northern rangelands; Indigenous Australia; and governance and management. From these perspectives, more attention must be paid to ensuring a social licence to operate across a range of uses, acknowledging and supporting a younger, more Indigenous population, implementing positive aspects of technological innovation, halting capital and governance leakages, and building human capacity. A recommended set of systemic responses should therefore (i) address governance issues consistently and comprehensively, (ii) ensure that new technologies can foster the delivery of sustainable livelihoods, and (iii) focus capacity-building on a community of industries where knowledge is built for the long-term. All three of these should be undertaken with an eye to the changing demographics of the rangelands.

WHERE ARE THE RANGELANDS AND WHAT DO THEY DO?

The rangelands (the Outback, the Bush, the Pastoral Zone, the Wildlands) are most of the inland area of the Australian continent where rainfall is too sporadic and landscapes/soils not of sufficient quality to farm annual crops and sown pastures on a continual basis (Figure 1). There are two definitional ideas: the first is remoteness and socio-economic disadvantage, where distance means services expected in urban areas are low or difficult to obtain; the second is a soil type and climate measure that allows grazing enterprises with cattle, sheep, goats and kangaroos to permanently occupy land (stippled area on Figure 1).

For such a vast area, there are many exceptions to definitional rules. Mineral riches near the towns of Broken Hill, Mount Isa and Kalgoorlie, as well as in the Pilbara, allow an urban-equivalent lifestyle and good transport infrastructure. Tourist towns and regional centres such as Alice Springs and Broome are similarly remote, but have good access to most services, except for long-distance travel to access specialised medicine and education in capital cities. Pastoral properties with fertile soils receiving water runoff from nearby ranges or flood-out river systems can maintain physical and financial production levels equal to the traditional country farming zone.

And nestled between these dimensions, Indigenous Australia coexists within landscapes it has known for all time, but remains buffeted by historic and contemporary attacks on its existence in cultural and physical terms.

Slightly less than 400,000 people lived permanently in the rangelands at the last census in 2016 (Figure 2). Numbers had decreased by 44,000 over the intervening fifteen years. Currently, 28% of population is Indigenous, whose numbers are growing and they are younger. The non-Indigenous population is declining slowly and they are older.

Australia's rangelands cover more than six million square kilometres and comprise four-fifths of the Australian continent (Figure 3). Grazing lands use more than one-half of the area; one-tenth is in the conservation estate; and less than one per cent under defence control. Over a range of tenure types, it is estimated that Indigenous ownership is nearly two-thirds.

Annual financial production from the rangelands is \$104 billion, dominated by mining, particularly iron ore from the Pilbara region of Western Australia (Figure 4). However, the remaining \$8 billion is not insubstantial, spread across cattle and beef (\$4.7 billion), tourism (\$2.7 billion) and sheep, wool, kangaroos and bush foods (\$0.6 billion).

Livestock numbers vary markedly with seasons and markets, and sheep numbers have shown a large decline from fourteen to four million in the period 2000–2016. Beef cattle now number over eight million and the majority are in the northern rangelands. Cattle have largely replaced sheep in the southern rangelands. Unmanaged grazers (mostly goats and kangaroos) make up one-half of the grazing pressure in the southern rangelands.

¹ This paper is based on a study published in *The Rangeland Journal* (2019) and co-authored by Barney Foran, Mark Stafford Smith, Don Burnside, Martin Andrew, Don Blesing, Kate Forrest and John Taylor.

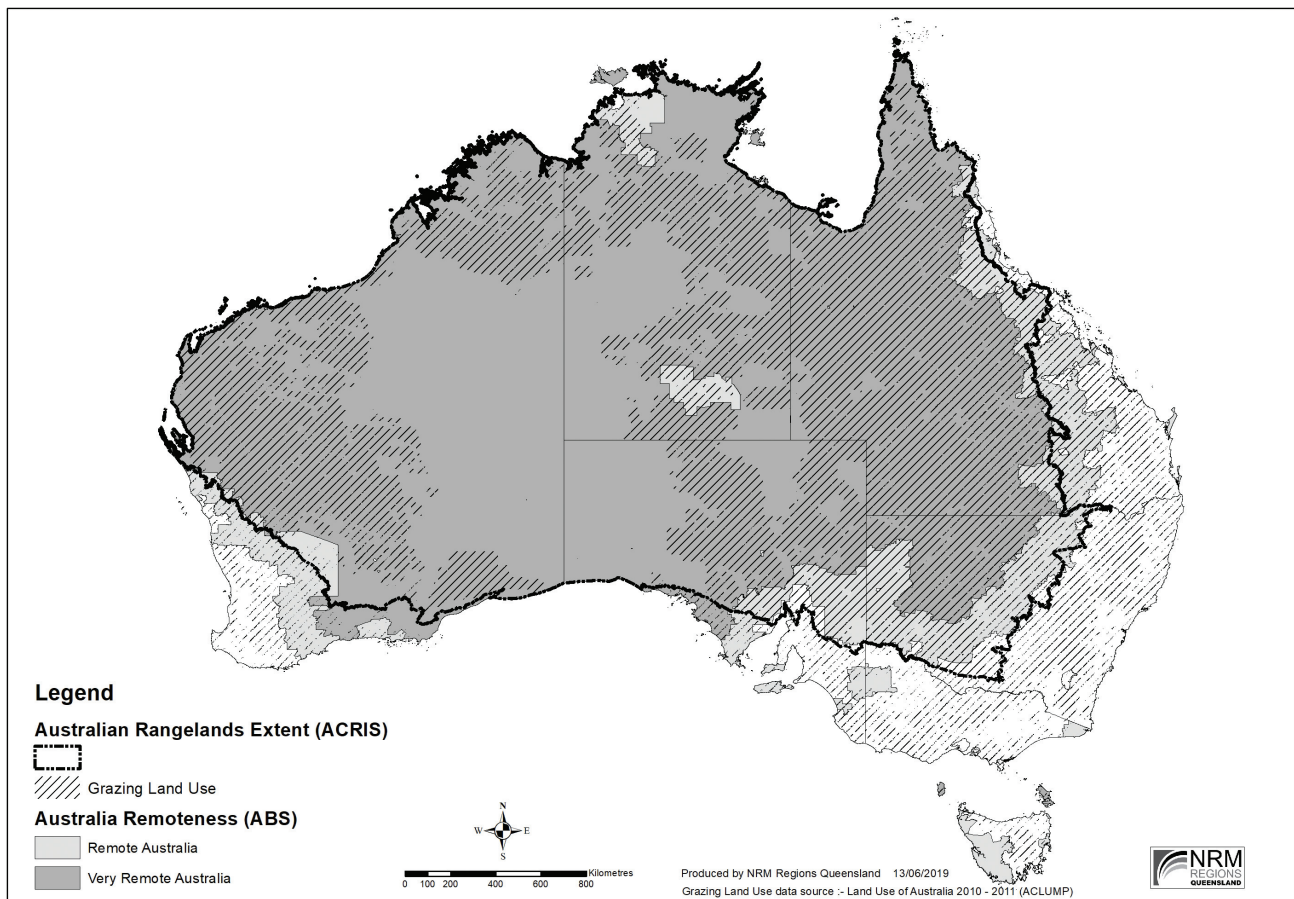


Figure 1: Australia's rangelands defined within the heavy black line showing remoteness and where domestic stock are grazed (stippled).

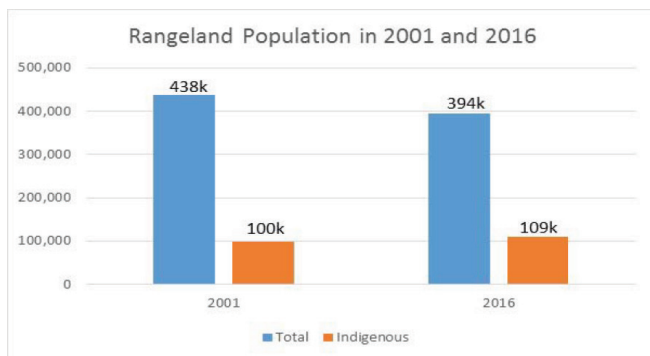


Figure 2: Rangelands permanent population at the 2001 and 2016 census.

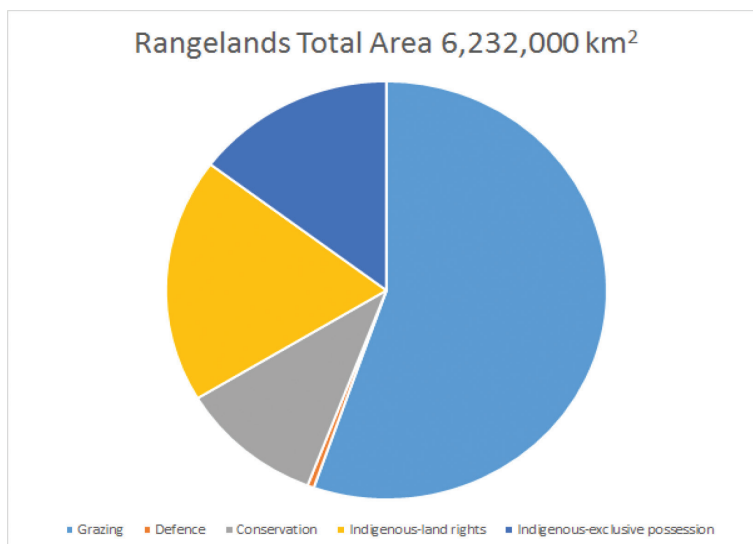


Figure 3: Estimates of land-use allocation in 2019. Note that these are well researched estimates but a full spatial enumeration at a national level is currently lacking.

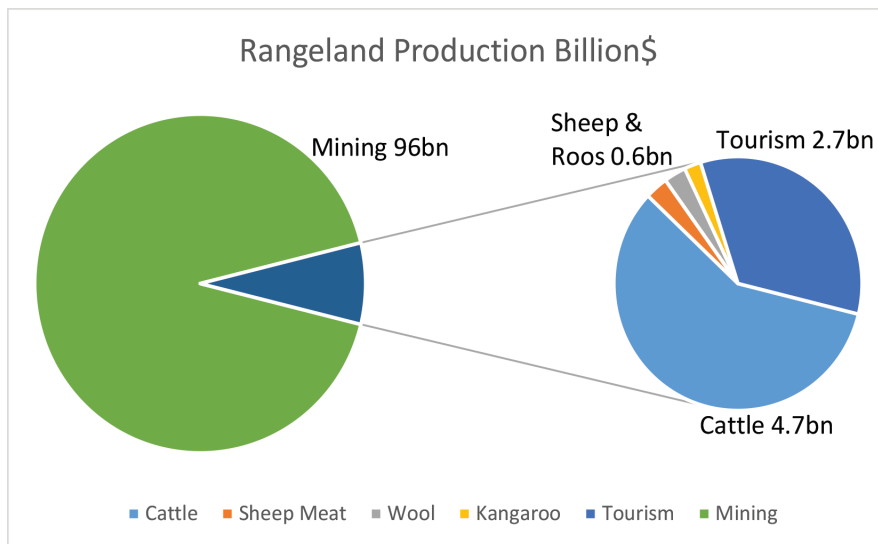


Figure 4: Rangeland financial production in 2019.

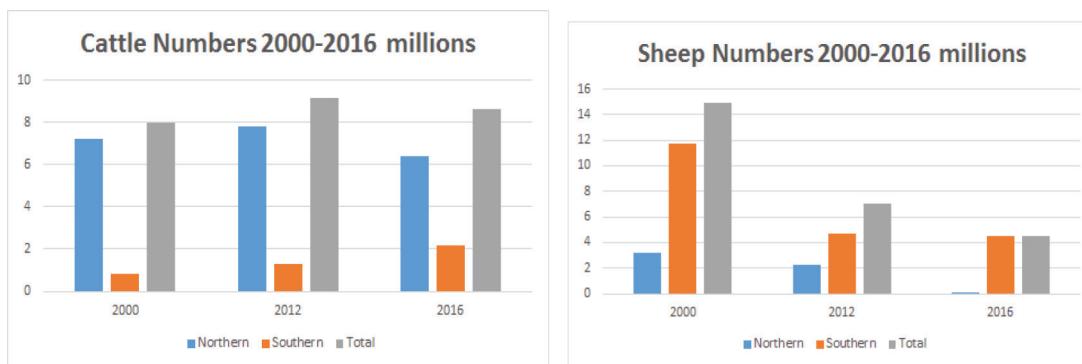


Figure 5: Cattle and sheep in Australia's rangeland for the period 2000-2016.

FUTURE RANGELAND PERSPECTIVES

Four-fifths of the Australian continent is difficult to overview, so in attempting to rekindle national policy focus some substantial issues or 'perspectives' have been developed. Separating the rangelands into northern and southern zones is a simplification with underlying physical differences and industry opportunities. The separation of the two is by extension of the New South Wales and Queensland border westwards to the Western Australian coast. The northern rangelands are mostly summer-rainfall driven, while the southern rangelands have a variable mix of winter and summer rain. Climate change will see the northern rangelands with higher rainfalls and, given the protein demand from Asian neighbours, there is increasing investment interest in beef cattle pastoralism. The southern rangelands have less certain climate predictions, but it will likely be hotter and have rainfall even more variable than the past. Thus, alternative land uses such as carbon farming and conservation seem to be a new trend. Past landscape damage is considerable, especially on fragile soil types. Given this situation, today the systems are driven mainly by rainfall and recovery is possible in runs of good years.

Without dingo predation, kangaroo populations in the southern rangelands can reach high levels and cause equal or more damage than poorly managed domestic stock. The status of endangered animals, especially smaller mammals, is dire in most areas, driven by fox and cat predation along with habitat damage. The exceptions are new conservation parks where predator-exclusion fences and continual management is allowing mid-sized mammals to be reintroduced and survive.

Indigenous populations are spread throughout the northern and southern rangelands, many of them still having strong and enduring ties to culture, land and ecological management. Applying Indigenous management practices to increasing areas of the rangelands is happening with many ranger programs, savannah burning and cultural maintenance activities. How to maintain a widespread spatial contact with increasing areas of Indigenous tenure sees a tension between being effectively there and managing, while having access to the habitation, health, education and lifestyle services that most regionally based Australians expect. There are no simple answers here except that rangeland futures are inextricably linked to effective and healthy Indigenous communities.

The rangelands have always been ‘out there beyond the horizon’. This is still the case, so that most rangeland tenures and policies are overseen from capital cities on the coastal fringes. This is unlikely to change as cities and coastal areas themselves are beset by fires, water shortages, habitat clearance and brittle urban infrastructure. Increasingly though, many Australians are experiencing the rangelands, many for the first time, as they make long inland treks in caravans and four-wheel-drives. How to garner permanent improvements for rangelands is uncertain. One way is for each region to have a live twenty-year strategic plan that underpins the locality but builds a ‘string of pearls’ where regions interlink and mutually prosper.

KEY SYSTEMIC ISSUES FACING RANGELANDS TRANSITION AND REGENERATION

In rangelands, framing options for stewardship, transition and regeneration for this requires larger spatial scales and longer timeframes than the farming zones of the inside country. That is the nature of beast! It has ownership tenures of 1000 square kilometres, long intervals between big rainfalls and interventions that are minimal if measured in human or machine effort. Thus the issues to guide the transition are large scale and often outside the rangelands system.

Maintaining the ‘social licence to operate’ requires that managers and their lobby groups always have their senses attuned to what the cities think and what’s happening in their consumer markets. Key to this is a steady evolution in thought and practice about what is ‘right and just’ anyway. Livestock exporters are now expected to be in charge well beyond the vessel leaving an Australian port. National parks now embed cultural values while still managing visitor expectation, habitats and animals. Any plans for intervention and development must withstand the blowtorch of international scrutiny before the bankers let loose the first pulse of capital.

Technology is a double-edged sword in many ways, particularly where it replaces people and skills. In such cases, small communities eventually fade away, taking with them the history and know-how that make civilisation tick. In an evolutionary sense it has always been so, and we do not pine for the impoverished farmers forced to move to cities by the industrial revolution. Rangelands, be they transitioning for Indigenous culture, grazing, conservation or mining, need real managers attuned to the nuances of landscapes, their moods and ecological bounty.

Governance has suffered in two ways. Communications technology means that everyone is connected no matter where and all answers need to be instantaneous. Secondly, these days everyone is a stakeholder and needs a courteous

hearing. Thus we have an abundance of oversight, an absence of accountability and a rolling log jam that is never freed.

Where to source landscape skills in the rangelands when human capacity is diminished by closure of research and learning institutions? To watch over four-fifths of Australia needs a new brand of poly-scientist who can service Indigenous interests, mining sites, pastoral properties and national parks. They can and should be local residents who hope to stay for the medium to long term rather than being driven off by funding cuts and the hollowing out of institutions.

Indigenous communities now own (or re-own) the majority of the rangelands and manage substantial capital funds derived from mining and other royalties. Their deliberate wishes for their own futures must now dictate future plans in many areas. Contemporary business frameworks will need to accommodate old ideas of land (we don’t own the land, the land owns us), timescales (yesterday, today and tomorrow — all the same to us) and ownership (collective versus individualistic).

SYSTEMIC RESPONSES

These systemic challenges limit the effective contribution of rangelands to national outcomes and create an undesirable dependency on external support. The right responses do not need more funds; rather they require a far-sighted integration of appropriate actions. Isolated projects, however well meaning, are undermined too often by lack of support from other parts of the system. For example, successful pilot investments in new industries fail to scale up because of inadequate communications infrastructure, governance support or human capacity building. Similarly, efforts to stimulate enterprises tend to target only supply or demand, not both; government initiatives in regional development may conflict with programs to introduce technologies that replace people.

So far, contemporary challenges arising in five key areas have been highlighted — maintaining social licence to operate; a population that is becoming more Indigenous and youthful; the opportunities and threats from new technologies; governance failings that result in leakage of financial and human capital from the rangelands; and inadequate investment in that human capital. Bringing these together with the foregoing five perspectives, and in the context of the developing systems view of rangelands noted above, a concise set of coherent and self-reinforcing actions that would reduce the dependency of rangelands on national intervention is now proposed (Figure 6).

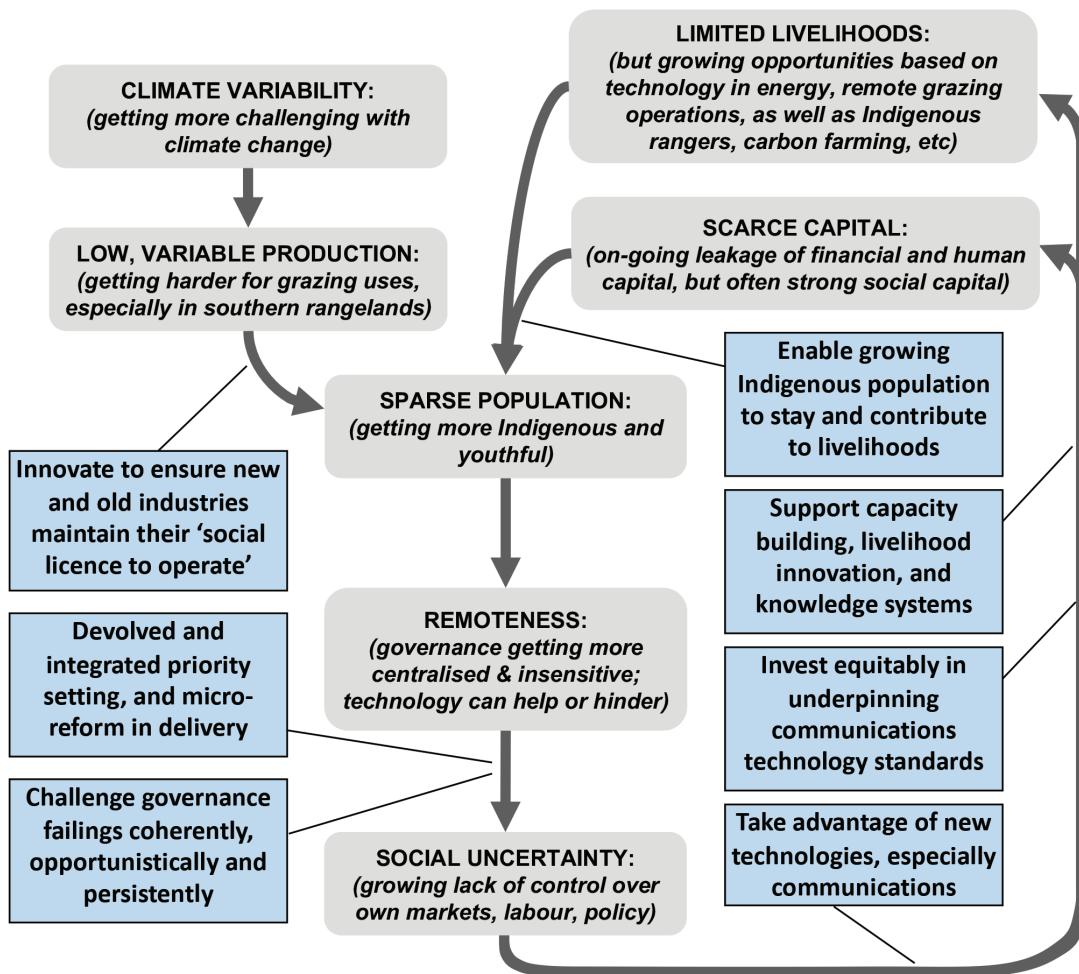


Figure 6: A checklist for thinking about how to intervene in rangelands. There are rangeland realities that will never be escaped (the grey boxes). The intervention points (the blue boxes) can be effective if they acknowledge the limitations and find a sweet spot where actions and policies are self-reinforcing.

Address the external governance issues of rangelands consistently and comprehensively

Although governance within the rangelands has probably never been better, the disjunction between how the rangelands function and the mental models of governance emanating from capital cities continues to widen as Australia becomes more urbanised. This trend will not change, but concerted and ongoing awareness-raising is needed for (mostly well meaning) central policy makers, supported opportunistically by institutional changes which embed:

- (a) Participatory systems that better define investment needs in rangelands and especially that accommodate Indigenous interests. This will include more genuinely devolved responsibility for setting priorities, more integration of Indigenous and non-Indigenous considerations, and a focus on micro-reform in regional policy delivery.

- (b) Coordinated and persistent action to ensure that national programs are applied in rangelands that are sensitive to how remote, lightly populated and often Indigenous-dominated regions function. This will require all policy delivery to include procurement that favours local knowledge and networks, policy delivery that is devolved to the local regions and enables local economies of scope and that is integrated to avoid fragmented funding streams that dissipate effort, and a careful consideration of the unintended consequences of any policy-driven initiative.

Ensure that new technologies and processes are available to support livelihoods to diversify and be sustainable, and that meet national needs for maintaining 'social licence to operate'.

Innovation is crucial to sustaining existing enterprises and developing new activities in rangelands, whether this be

specific technologies such as broadband or autonomous vehicles, or the ongoing improvement of ecological and social understanding of new opportunities such as carbon farming or more efficient livestock production. The risk is that a gap may widen between the rates of innovation in cities and those of the rangelands; the latter needs to maximise the value of any innovation, avoid reinventing the wheel and react quickly to perverse, unintended effects.

Key actions are listed below.

- (a) Ensure an equitable investment in communications technologies to enable the rangelands to keep up with rates of innovation in cities and allow rangeland enterprises to operate on a 'level playing field' with those elsewhere.
- (b) Support a sustained innovation system, including applied research in rangelands, that explores the application of diverse new technologies and processes as part of new enterprise systems, whether carbon farming, water point and pasture monitoring, fire and biodiversity management, feral animal control, renewable energy, tourism or mining.

Redouble capacity-building efforts to enable rangeland inhabitants to live in and manage the rangelands productively for the nation.

Costs of education and training are inevitably higher in remote areas, but the returns on this investment are reduced social dependency and more effective and productive rangeland management outcomes. These benefits will arise from the following actions.

- (a) Educating and training the expanding cohort of Indigenous youth to support them to engage in rangelands life and culture in ways they find meaningful and fulfilling.
- (b) Enabling all rangelands inhabitants to understand their social and physical environment — and how that links to global and national issues — so that they can participate effectively in governance frameworks and can better capture the benefits of innovations and technology.
- (c) Engaging the whole rangelands community in appropriate research and development to support rangelands futures (e.g. rigorously applied adaptive management), while ensuring that knowledge is retained and integrated for contemporary application. Narrow cost-cutting efficiency measures should not be allowed to undermine these initiatives. Underpinning all of this is a need for coherent and more positive narratives about the Australian rangelands that recognise their value, their cultures and their different

ways of operating as assets in their own right. This is in contrast to the common 'deficit model' in which the rangelands somehow do not work as well as cities or farming lands. This will help to encourage rangeland inhabitants to continue to live in and look after the region, and to engender clear-eyed support for this from Australians as a whole.

SO WHERE DOES THE FUTURE LEAD US?

An embrace of shared cultures seems the only way ahead for the rangelands. Over 60% of the area has returned to Indigenous ownership in a variety of tenure types. Nearly one-third of the population is Indigenous — it is younger and increasing — while the non-Indigenous population is older and declining. Differences in opportunity are stark and persistent but will change if stewardship of country is seen as mandatory. Tourism might lift to a philosophical journey where caravans follow songlines rather than tracks of explorers and drovers, thus 'discovering' country for the 'first' time. Mining industries are finding that culture means more than cash when global perceptions eviscerate share prices and executive futures. Conservation requires both traditional knowledge and modern analysis to retain habitat function and save species. Modern pastoralism, like mining, can only be enhanced by the re-emergence of an Indigenous workforce that knows both cattle and country.

Live regional plans seem the only way to extract leverage from the inevitable fire, drought and flood disasters or socio-economic downturns. Conceptually we can think of twenty or more discrete rangeland regions which each might receive a funding bucket of \$50–100 million sometime in the next two decades. This might come in small or big lumps, but a strategic plan can make the funding additive, rather than being frittered away on the 'Mayor's pet project'. Queensland's Longreach region has shown that communities do better if they work together, relieving short-term pain but importantly making long-range plans that benefit everyone. Historically, fodder relief and beef roads have been answers to drought, but thinking systemically, developing networks of safe, serviced camping grounds run by locals might do better long term to generate cash and employment.

Regions must have people to manage and improve land. The profit motive, whether expressed in dollars or habitat improvement, brings a discipline to what is done each day, month and year. There is no magic outcome from a people-free re-wilding process, because feral animals and weeds already have a head start of 200 years. Future markets and governments could pay for landscape services, pest animal and weed control, biodiversity protection and carbon farming. If each of the 6000 rangeland pastoral stations were paid one million dollars yearly for landscape services,

this sums to six billion dollars or half of one per cent of GDP (Defence 2%, Health 10%). Stewardship payments for nearly half of Australia's landmass could be covered by a quarter of what Australians spend yearly on gambling (\$27 billion). Animal production from cattle sheep and kangaroos is nearly the same dollar amount (Figure 4). With the stewardship cost and production values roughly equal, there is scope for a transition to halving production and balancing income with stewardship payments. Ensuring that stewardship supplies are purchased locally and that monitoring teams live regionally can help maintain the thin veneer of local communities. How to prove stewardship is locking in ecological gains remains a challenge. Weekly remote sensing of the entire continent is now available, measuring ground cover, vegetation structure and soil erosion risk. The tools are available, the cost low, but it requires the mindsets of many to change.

Reference

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