Looking Out or Looking In: Two Ways Ahead for Australia's Rangelands[1]

Don Blesing[1], Martin Andrew[2], Barney Foran[3], Nick Abel[3] and Jenny Bourne[4]
[1] Ramsyn, Caltowie, SA 5490.
[2] AACM International, 11-13 Bentham Street, Adelaide SA 5000.
[3] CSIRO Division of Wildlife and Ecology, Canberra ACT 2602.
[4] Primary Industries South Australia, Port Augusta, SA 5700.

Abstract
Participants in the Australian Rangeland Society's Ninth Biennial Conference analysed four scenarios for the future use and management of Australia's rangelands. Analysis involved identifying the opportunities and threats posed by each scenario, the actions required to address them and the likelihood that the scenario might eventuate. We have reviewed these analyses and conclude that they reflect two possible directions which may determine the future of the rangelands.

*One possible direction entitled **Looking Out**, anticipates that the economic rewards generated by a full application of free market policies with rangeland enterprises having strong external linkages will result in production and management efficiencies which benefit the Australian economy. Under this direction, good financial returns from industries in the rangelands allow appropriate investment in human, cultural and ecological resources currently considered as being under threat; this in turn will lead to major readjustments affecting individuals and communities - there will be winners and losers.*

*The second possible direction entitled **Looking In**, anticipates that rangeland Australia and its human, economic and ecological resources will be best served by the development and maintenance of strong local communities in each rangeland region. Under this direction, empowerment of local communities and reconciliation between Aboriginal and European peoples give a base from which a range of new land uses, products and enterprises will evolve.*

The Looking Out direction could be undercut by the re-emergence of social inequality, feral animal, weed and disease quarantine problems. The Looking In direction could likewise be undercut by the inability of rangeland peoples to work together fully for new futures and our inability to design and implement the new institutions needed to underpin a radically different social system. The two directions are probably incompatible because the driving mechanisms are so contradictory. Looking Out is driven by economic returns and individual interests, while Looking In is driven by communities and shared values.

However it is possible that the conflicting directions could operate effectively if applied in different regions of Australia's rangelands. The Looking Out direction could be most suitable for as few as five core rangeland areas where pastoral production is highly valued and rangelands are resilient. The Looking In direction might be more appropriate for most of rangeland Australia where communities are not dominated by the pastoral ethos, where we anticipate that other values might outweigh pastoral production in the future and where the rangeland resource is considered less resilient.

[1] Reprinted with permission from: *Sustainable habitation in the rangelands*, edited by Nick Abel and Sarah Ryan. Proceedings of Fenner Conference on the Environment, Canberra, 29-30 October 1996. CSIRO Australia. 156 pages. ISBN 0 643 06327 7.

We suggest that these two directions be used as the basis for further regional consultation with rangeland communities, and that the output of these participatory consultations form the basis of a regionalised and practical National Rangelands Strategy.

Background and Process

The Ninth biennial conference of the Australian Rangeland Society, held in Port Augusta in late September 1996, was used as a venue for a foresight study on the Australian rangelands out to the year 2010. This foresight study had been preceded by a number of foresighting studies conducted by the Australian Science, Technology and Engineering Council (ASTEC, 1996a) which had focused on topics such as urban water (ASTEC 1995a), networks (ASTEC 1995b), shipping (ASTEC 1996c), health (ASTEC 1995c), and youth attitudes (ASTEC 1996b). In addition a number of corporations and agencies (OSCA, 1996; GCA, 1995) have been using foresighting as an aid to strategic planning, and a number of scientific approaches are being developed mainly in the area of global change (Stafford Smith & Milligan 1996) and human impact on the environmental (CSIRO, 1995).

The aim of the Rangelands Conference study was twofold. Firstly it aimed to provide conference participants with practical skills in some foresighting methodologies, and the ability to take those skills back to their enterprises, agencies and communities. Secondly it aimed to provide an input into rangeland policy at a regional, state and national level. This Fenner Conference on Sustainable Habitation in the Rangelands was noted as the first major forum where the preliminary results of the study could be presented. We wish to stress that the elapsed time of one month between the two conferences has precluded a full analysis of the study outputs, or a re-evaluation of the points raised under the different scenarios (some of which could well apply to other scenarios as well), or a second round of full consultation with all conference participants. These caveats mean that we the authors are responsible for the analyses and views presented in the paper, and these views should not be attached to either the Australian Rangeland Society, or the companies or agencies which employ us.

Methods

Four contrasting scenarios were developed which described possible futures for Australia's rangelands. The scenarios were driven by a number of contrasting dominant political and social ideologies which gave different economic and environmental benefits and costs (see Table 1). A workshop structure was developed which led participants into the mindset of the scenarios.

Successful foresighting requires systematic identification of all stakeholders and areas of relevant expertise, and considerable effort to ensure their involvement at each stage. Early stage foresight activity in 1995 by the Conference Committee did identify these groups, along with key issues and key people to be used in the conference process. In our case, the conference registrants were felt to be a reasonable representation of the range and depth of the relevant stakeholders and expertise, reinforced by planned encouragement to attend extended to groups not normally well represented in ARS conferences. The identified stakeholders included: pastoralists, rangeland scientists, miners, tourist operators, 4WD clubs, conservationists, Aboriginals, governments, social scientists and the urban community.

Participants were allocated to groups so as to maximise the diversity of rangeland stakeholders in each group. Each group considered one scenario only, independently of the other groups. Each scenario was considered by five groups. Groups met five times over three days to: develop their scenario further, to anticipate and summarise the key opportunities and threats which might evolve under the scenario, and outline the actions (political, economic, social and technological) which would be needed to capture the benefits and avoid negative outcomes. Scenarios were considered for the Australian rangelands as a whole, and then separately for various rangeland regions (mulga

lands, mitchell grass, chenopod shrublands, spinifex and northern tropics). In addition to their own knowledge, participants were able to draw on a background paper on the Australian rangelands published ahead of the conference (Maconochie 1996), and eleven keynote papers (Hunt and Sinclair, 1996).

The rich detail of group discussions was captured on butchers' paper and then distilled into data sheets. These were summarised by two groups working at different levels. The five facilitators of groups working on each scenario summarised the outcomes of their independent workshop sessions for presentation to the final conference session. In parallel the writers compared and contrasted workshop outputs in order to highlight innovative suggestions that arose from group discussions, and prepared these for a presentation designed to highlight the differences between the scenario outcomes. We further decreased the dimensions of the four original scenarios to two possible future directions when it became obvious that workshop participants were noting the importance of social factors in three scenarios ("best practice", "extra green" and "partial retreat") and the importance of free-market economic policies in the remaining "economic growth" scenario.

Opportunities and Threats

The first indicator of the success of our foresighting workshops was in the ability of the workshop groups to stay within the scenario roles and to look for opportunities and threats within the constraints imposed by the scenario (Table 2). The great majority of the opportunities suggested were more generic in their approach (eg, developing carbon sequestration as an "industry") because the data capture tended to concentrate on big ideas rather than good specific ideas, and we are now scanning the "butchers paper" for specific good ideas eg better fencing technologies

The "economic growth" scenario noted a "fast tracked" kangaroo industry as a specific opportunity compared to the current process of muddling through. The big ideas from this scenario emphasised the speed and decisiveness of entrepreneurial action under a better investment climate. When the nation had become outcome (versus process) orientated, then the diversity and integration of marketing opportunities were expected to increase. Removing constraints to action would improve linkages between market and other signals and lead to better land management. Philanthropy from the mega-wealthy was also expected to increase with benefits flowing to conservation causes and Aboriginal peoples. There were however considerable risks anticipated if the "economic growth" scenario did not meet specifications. We anticipated that social deprivation and polarisation might increase, that Aboriginal and European culture might be lost, that the rangelands might be further depopulated, and that feral animal, weed, land degradation and animal disease problems might all get worse.

The "best practice" scenario saw that best opportunities might be found in radical new land uses that were particularly Australian and produced a wealth of lifestyles as well as clean-green products eagerly sought after on world markets. Central to this was the regionalisation of managerial acumen and resource information. The downsides were particularly insightful. A transition towards the "best practice" scenario was seen as having a high risk of being boring, of being highly dependent on technology and of being potentially controlled by outsiders, with subsequent loss of control and a drop in quality standards.

The distinctive opportunity offered by the "extra green" scenario was that the natural capital of the land was still intact and this had kept all of our future options open. There were of course many environmentally sound products for export along with appropriate technologies, remote communications, land rehabilitation, genetic manipulation and lifestyle settlements in attractive locations. Many opportunities evolved from a new national structure, but these gave a good base to export skills and knowledge ie we could teach the world about sustainable development in rangelands. There were opportunities to design economic structures which enhanced regional

economies and stimulated “extra green” innovation. The key risk was that the effort needed to maintain the high quality control would run down and the finely balanced control system would fail. The risk of continued high tourism impact and a saturation of the world demand for natural products might see the link with our image and our trading world broken, and resultant economic and social decline.

Hunting Australian wildlife in remote, beautiful and spatial locations, cheap land and labour which would attract investment and land for carbon sequestering and solar energy (perhaps a hydrogen fuel industry) were seen as the key opportunities under the “partial retreat” scenario. Toxic waste disposal in safe locations was also seen as an opportunity. World food scarcity driven by population growth might even strengthen the market for traditional meat products from rangelands. The biggest risk noted is that we might pass social, economic and ecological thresholds through which it is impossible to return. Risks which further marginalised the lifestyle in this scenario included water controlled by powerful minorities, BSE “mad cow disease” scares which destroy demand for animal products and Australia losing the ability to retain what meagre returns it is due through its overseas trading operations.

Actions to capture *benefits* and avoid *downsides*

The opportunities offered by the “economic growth” scenario could be captured once the financial and regulatory environment had been changed to stimulate and facilitate the managerial and entrepreneurial acumen of the managers (Table 3). Central to this was a change in ownership rights where land owners owned the rights of all resources on or below an area of rangeland, the removal of support to poor performers, a range of charges for what are now considered free goods (access, amenity etc.) and removal of protective and legislative constraints on natural resource use. Underlying the functioning of such a scenario is the belief that proper environmental care will result from full ownership of all the values, not just the pastoral production ones. The implementation of the scenario would be accompanied by private investment in resource accounting frameworks which are open to full public scrutiny. Only financially viable enterprises will persist on higher quality rangeland; many producers will therefore leave, and many rural population and settlements will decline because support to some remote and small centres reliant on pastoralism cannot be justified on economic grounds. Populations will be move increasingly to coastal cities.

The actions needed to capture the opportunities offered by the “best practice” scenario sought to remove a range of social and organisational constraints which are seen to restrict collaboration and information flows. Implementing a regional approach to resource information and facilitating collaboration between states were examples of these. Both public and private service providers would have to live in the rangelands. A range of incentive mechanisms designed to reward the developers of clean-green information systems and the return of mining royalties back to regions were economic examples which were offered. It was surprising that such a technologically orientated scenario collected so few technological imperatives, but subsequent discussion re-emphasised that institutional and organisational constraints were paramount in the implementation of the “best practice” paradigm. It is likely that science and technology issues were perceived as less important because of the overwhelming influences of socio-economic and political factors.

The “extra green” scenario signalled a major change in the goals and aims of rangeland management in Australia. At a national level the formation of a “Rangelands Commission” (c/f Murray Darling Basin Commission) was suggested to take the rangelands out of the backyards of the states. It was necessary to devolve real power to the community level in rangeland regions, to implement new laws on bio-prospecting and the return of all production profits and royalties to their region of origin. Because the scenario depends on upgrading and re-investing in natural capital, a full implementation was required of methods for natural resource accounting, regional accounting for water usage, and a range of incentive payments such as stewardship fees and real

estate prices which reflected the retention of natural capital values. Once we had done all of these things we should capitalise on the educational opportunities and offer our rangelands to the world as a living laboratory and classroom. The opportunities this offers in a knowledge and information age is unparalleled. Since our traded income depended on the quality and naturalness of a wide variety of rangeland products, we would need to implement a stringent system of national quarantine and quality assurance mechanisms.

The "partial retreat" found few opportunities to capture in a market sense and most actions were sought to strengthen or even reinvent community cohesiveness, so that self reliance would help survival in a marginalised environment. Because of the carbon sequestration opportunities available in the mulga and northern rangelands, one key positive action was to develop international agreements for carbon offsets from industrialised countries and ensure that the financial returns flowed directly to the rangeland region concerned. The development of appropriate technology centres in rangeland regions might also help to improve quality of life where financial incomes were insufficient to acquire the latest technological chattels from the first world.

Probability of Scenarios Occurring

In arriving at a consensus whether the different scenarios might start to become operative by the year 2010, we asked workshop participants to break links with their role play position in the future, and give an estimate from now looking forward. This proved to be difficult for a number of participants to do. Nevertheless a reasonable consistency resulted (Table 4). For rangeland Australia (and for the nation generally) the participants felt that the "economic growth" scenario was probable by the year 2010. The other three scenarios were judged unlikely to happen. Opinion at the level of broad biomes held that different scenarios could exist within other scenarios that still continued to operate at a national level. It was judged probable that the mulga zone would be experiencing an "extra green" or "partial retreat" scenario by 2010 and that it was highly unlikely to achieve "best practice". The chenopod zone was judged capable of being in "economic growth", "best practice" or "extra green". The mitchell grass and northern zones were judged as probable of being under "economic growth" or "best practice".

The opinion that the "economic growth" scenario seems probable to occur in an overall sense seems based on both world and national trends for the past two decades. As such that outcome is not surprising. We anticipate that it will occur, although many individuals reacted negatively towards the harsher predictions of the "economic growth" scenario as we described it. More surprising to us was the opinion that the "best practice" scenario was unlikely. More exploration of this showed that participants felt we were unable to link cooperation and integration at regional, state and national scales. Moreover they felt that while we were able to achieve the technical parameters required of such a scenario, it was too utopian to happen without a major crisis. It would never occur while we are just "muddling through". Much of the last four decades of range management research in Australia has been directed towards the ideals of "best practice", yet it seems even rangelanders themselves doubt if we have the social cohesion to strive for such an ideal.

Forcing participants to give a probability for the scenarios gave a depth and diversity of reaction that we were unprepared to fully capture in a data sense. Nevertheless some broad themes emerged. While the participants felt that the "economic growth" scenario was probable, many reacted negatively to the details of the scenario itself (as mentioned above), so much so that it helped unite many ideological opponents against the scenario. They thought that it would happen, but they would prefer that it did not. In addition they felt that it contained many risks of animal disease, feral pests, social inequity and weed invasion if key economic assumptions failed to provide the economic, ecological and social benefits which the ideology promised. In a similar way the "partial retreat" scenario oppressed many of the participants who had to work with this "bad news" scenario. Some found it all together too close to reality and it was obvious that "partial retreat" was

already occurring in several locations within the rangelands. The “extra green” scenario was accepted more easily than most and this did surprise us. While it was judged unlikely to happen, many participants felt safer there, although they doubted whether we could remake Australia’s institutions sufficiently to allow such a world to come into existence. There was further doubt that the rest of the world would allow or value it. Within the qualitative rankings we obtained through the workshop, the many comments we received verbally and the data compilation we were performing ourselves, two clouds of commonality started to appear. One was a probable world driven by economic values to which many participants were not attracted. A somewhat more distant cloud was dominated by the ideals of community participation, new biodiversity products, clean green production methods and high conservation value. Many of the participants felt more at home in this cloud, but they felt it was unlikely to happen. We describe these two distinct worlds in the next section.

Two Possible Worlds

That Australia is currently being managed within a framework of economic rationalism is obvious to any reader of newspapers, and so the workshop participants were logical in anticipating that the “economic growth” scenario would be operating in 2010 and beyond. Thus our “Looking Out” direction was conceived to note that in a rapidly globalising world where our rangeland production items (mining, pastoral, tourism etc.) are traded in a global marketplace, we constantly strive for some sort of comparative advantage. For this direction to become functionally efficient (ie to be compatible with the driving ideology behind a preferred scenario such as this) there are a number of key actions which must take place (Table 5). Rangeland areas must be chosen that can prove past and future economic viability under expected market and climate variability. Once this is done there must be a fairly quick transition to an economy where production efficiencies, appropriate business structures and land ownership allow businesses on rangeland to function freely. Private ownership of conservation and tourism land is compatible with the “economic growth” ideology, and the transition to private ownership should be facilitated under this direction. However participants in the workshop noted that environmental quality was often threatened under private ownership, by what economists term environmental externalities. To counter this threat it must be demonstrated that environmental sustainability does underpin economic sustainability, so stakeholders can make informed decisions which will benefit both their private economies and the environment. R&D to demonstrate this nexus would therefore have be an immediate priority (Morton & Price 1994, MRC 1996). Pending this, and the applying the precautionary principle, rangeland zones operating under the “Looking Out” direction should operate under a publicly audited resource accounting framework where the onus is on the land owner to prove environmental sustainability of all management actions.

Many participants found it easy to identify with the ideologies contained within the “extra green” scenario, yet most felt it unlikely that it would be in operation by the year 2010. Apart from the current dominance of the “economic growth” scenario, most felt that a core requirement for radically new institutions would prove elusive. Yet both the mulga and chenopod zones were considered probable for the “extra green” scenario. These thoughts led to the development of the “Looking In” direction with a strong emphasis on viable rangeland communities, reconciliation between peoples, and between people and land, a strong emphasis on multi-use of land and the establishment and maintenance of a strong environmental ethic. Central to this direction is the retention of production returns in the rangeland zone from where they originated. This would be somewhat out of character with the last two centuries of rangeland habitation within Australia, and it might be difficult to merge into the current political and economic ideologies which manage the nation. However the authors would contend that a vote by the participants of the conference would favour this future direction for our rangelands, while recognising the inevitable dominance of the other “Looking Out” future direction.. (It should be noted that commercial business people were probably under-represented at the conference). However the challenge of implementing this vision

would provide no easy recipes since it depends on people and communities so much. In contrast, the market mechanisms central to the "Looking Out" direction provide many simple assertions, many as yet untested, which promise us a prosperous future if markets are allowed to assert their dominance.

A way ahead

The strategy of using our "Looking Out" and "Looking In" directions will rely on a regionalisation of rangeland Australia which incorporates people, business, environment and futures. The Holmes (1996) regionalisation, slightly revised from the one he presented at the conference (Table 6) gives seven types of regions based on accessibility, and potential for pastoralism, mining, recreation/tourism and "Aboriginal self determination". The "Pastoral" class lists seven regions, and our initial view is that these, together with the Barkly region of the "Remote Pastoral" class, are the regions which should undertake the transition towards the "Looking Out" direction. Four of Holmes' classes occupy the other end of the scale ("'Frontier' regions in flux,", "Aboriginal homelands", "Stressed pastoral" and "Remote pastoral" (excluding the Barkly region which is a traditionally productive region) and they should start the transition towards the "Looking In" direction with major investment into community infrastructure and radically changed ownership patterns and government institutions. Between the two extremes are the two other "Urban-Dominated" classes which might go either way. While scientists prefer hard edged classifications, our inability to predict the future with any reliability suggests that we prepare for the inevitability of surprise. The prediction in 1970 of the demise of the northern rangelands would be laughable today with the success of the live cattle trade and the rise of ecotourism and mining. While some core areas have already self-selected their future direction, their exact boundaries should remain somewhat diffuse to allow new locations of lifestyle or commercial activity to emerge.

Putting Our Rangelands Futures in Context with Other Foresight Studies

The foresight process and analysis identified two future directions which appear incompatible when applied to all rangelands, but could be applied selectively to different regions. A range of strategies for the future were also identified which were common to all scenarios, and are likely to be valuable for future planning and decision making in the rangelands.

We suggest that these directions and common strategies be used as the basis for further regional consultation with rangeland communities, and that the output of these participatory consultations form the basis of a regionalised and relevant National Rangelands Strategy.

Other studies (ASTEC 1994, ASTEC 1996a) have sought to analyse foresight outcomes to identify major trends or drivers of change as a framework for considering the future. The ASTEC (1996a) study identified four drivers or "key forces" for Australia through to 2010: global integration, the application of information and communication technologies, environmental sustainability, and advances in biological technologies. A few critical technologies were identified as common to all futures in the ASTEC study, which emphasised the increasing role of science and technology in enabling us to meet our national and sectoral goals.

Our analysis to date shows some congruence with the above key forces:

- global market pressures dominated perceptions of rangeland futures, leading to a reduced emphasis on pastoralism and an increased emphasis on other rangeland uses under both directions
- environmental sustainability was accepted as a major rangelands driver, although strategies to achieve this goal differ markedly between directions

- information and communication technologies were accepted as pervading all futures; they will be used predominantly to generate profits in the Looking Out direction, and to facilitate the building of improved rangeland communities in the Looking In direction.

Our rangelands study identified some strategies common to each likely direction, and considered to be important well into the future:

- a continuation of the strong use of leading edge technologies in mining, an emphasis on new technologies in tourism to ensure sustainability, and an opportunity to incorporate new technologies in innovative ways to improve remote area living conditions for Aboriginal and non-Aboriginal peoples. There was less emphasis on the use of new technology in pastoralism.
- innovative mechanisms for achieving multipurpose landuse in sustainable ways
- regional retention of benefits flowing from these scenarios to further ecological, economic and social goals
- targeted use of information technologies to overcome distance barriers and provide management with much improved information for better decision making
- much improved ways of reducing energy use and minimising environmental impacts of rangeland habitation and development
- a focus on developing unique products from the Australian rangelands.

Refining Our Workshop Process

Workshop processes which purport to reflect community attitudes in a democratic way must be open to analysis and audit. Our post conference assessment noted a range of positives and negatives, and new processes we should include when we take the approach down to a regional basis. The use of scenarios, selection of workshop groups and a tight regimen of focused interactions allowed a broad and equal contribution by participants. Many felt empowered by the process to the point that they sought ownership of their workshop contributions and a wish to have them live on. On the negative side, the time scale to 2010 was considered a little short, the scenarios were constraining and some participants were oppressed by the rangeland worlds presented in some scenarios. Groups generally contained too little expertise to apply the scenarios to all rangeland regions.

In future workshops with a more regional focus we would maintain the efforts to ensure balanced and comprehensive membership of stakeholders, allow participants more freedom to work up their own scenarios, more time to follow up the second and third factor interactions of key driving forces, and develop a more consistent procedure for the capture of strange and innovative ideas.

As an ambitious trial of the foresighting process within a framework of tight logistical constraints, the conference exercise must be regarded as an outstanding success. Indeed the relative success of the process opens up a number of possibilities as to how to further extend these outcomes into community and political processes at regional and national levels, possibilities which we are now exploring. The presentation of this paper at a Fenner Conference is a first, but limited, output, given the depth and breadth of our futures workshop interactions, and we look forward to using the Fenner discussions to progress these rangelands futures deliberations.

Acknowledgments

The authors would like to thank the organising committee of the Ninth Biennial Australian Rangelands Conference, and the Council of the Australian Rangeland Society, who dared to be different by taking on a complex and novel (for the ARS) workshopping procedure. These results are the outcome of intense periods of discussion by all the conference participants. Special thanks are due to our expert facilitators and trainers Cate McKenzie of ASTEC, Jim Hirsch (Primary Industries SA) and Amanda Johnston (Dept Information Technology SA) and to the twenty group

facilitators who were thrown in the deep end and had to lead their workshop groups through periods of elation and despair, including the four lead facilitators who synthesised and presented group outcomes: Don Burnside, Tony Gleeson, Megan Lewis and Steve Morton. Our thanks, also, to our secretariat team Kerry Trew and Brenda Honan of Primary Industries SA who typed data sheets quickly and efficiently.

In writing this paper so quickly after the conference, the authors must admit that the spin they have put on the proceedings has only been briefly aired before our conference community, and only before a small sub-group. Thus the authors take full responsibility for any errors, misinterpretations or incorrect extrapolations.

References

ANZEC and ARMCANZ (1996). Draft National Strategy for Rangelands Management. Commonwealth of Australia

ASTEC (1994). Matching Science and Technology to Future Needs 2010: an International Perspective. Commonwealth of Australia, Canberra. 68 pp.

ASTEC (1995a). Curbing Our Thirst: Possible Futures for Australia's Urban Water System in the 21st Century. Commonwealth of Australia, Canberra. 67 pp.

ASTEC (1995b). Surf's Up: Alternative Networks for Full Service Networks in Australia. Commonwealth of Australia, Canberra. 73 pp.

ASTEC (1996a). Outcomes of the study: matching science and technology to future needs 2010. Commonwealth of Australia. 73pp.

ASTEC (1996b). Having a Say about the Future. Young People's Dreams and Expectations for Australia in 2010 and the Role of Science and Technology. Commonwealth of Australia, Canberra. 73 pp.

ASTEC (1996c). Australian Maritime Industries: Priorities in science and technology, Commonwealth of Australia, September 1996. 88 pp.

ASTEC (1995c). A foresighting study: management of neurodegenerative disorders in older people 2010. Commonwealth of Australia, 1995. 71pp.

CSIRO (1995) The futures gazette. CSIRO Resource Futures Program November 1996, 12pp

Foran, B. and Abel, N. Workshop scenarios. Unpublished loose papers for the Ninth Australian Rangelands Conference, Port Augusta, September 1996. (*Note: these may become available on the Australian Rangeland Society's Internet site*)

Holmes, J.H. (1996). Regional strategies for Australia's rangelands: translating resource values into regional benefits. *In* Working papers, "Sustainable Habitation in the Rangelands" (1996 Fenner Conference on the Environment), CSIRO Division of Wildlife & Ecology, Canberra.

Hunt, L.P. and Sinclair, R. (1996). Conference Papers, Ninth Australian Rangeland Conference, Port Augusta, September 1996. Australian Rangeland Society.

GCA (Grains Council of Australia) (1995). Inventing the Future. A report commissioned by the Grains Council of Australia, Canberra. 71 pp.

Maconochie, J (1996) Background paper for the 9th Biennial Conference Australian Rangeland Society Range Management Newsletter **96** (2): 10-17.

MRC (Meat Research Corporation) (1996). NAPnews, Newsletter of the Meat Research Corporation, Sydney, Winter 1996. 16 pp.

Morton, S.R. and Price, P. (Eds) (1994). R&D for sustainable use and management of Australia's rangelands. Proceedings of a national workshop and associated papers. LWRRDC Occasional Paper Series No. 06/93, Canberra. 199 pp.

OSCA (Office of Strategic Crime Assessments) (1996) The strategic setting: A discussion paper. OSCA Occasional Paper 3/96, Canberra.

Stafford Smith, M. and Milligan, A. (Eds) (1996). Future change in Australian rangelands. Report of a workshop held in July 1994 in Canberra.

Table 1. The dominant ideologies driving the scenarios. The full scenarios can be obtained elsewhere - see the references.

Economic Growth	**Best Practice**	**Extra Green**	**Partial Retreat**
Utilise nature and value dollar wealth Deregulated and free-market economy. Encourage individual wealth creation. All positive things for the environment, rangelands or people are done through the trickle-down effect. This results in social inequity for those the trickles do not reach, such as some Aboriginal groups and graziers on less productive land. Little institutional control over the environment. The Australian economy dominates the environment, and is in turn dominated by the world economy. Capital investment is prone to large fluctuations. Mining and high-volume tourism are major earners, and are supported by publicly-funded infrastructure. Fibre and meat markets boom and bust with trade fluctuations, which have driven many families off the range. The rangelands are mainly controlled by companies, and have a purely utilitarian role. Biodiversity is valued primarily for its utility to tourism or as a source of genes; many potentially valuable genes are now stored using new technologies.	*Manage nature and value enough dollars* Good rangeland management and good animal husbandry rule. Stewardship and balanced consumption are dominant values. A longer-term view is taken and communities and environment are balanced. Incomes are equitable, standards of living moderate, and Aboriginal people share opportunities and responsibilities with other citizens. There is strong institutional control of environmental management. Tourism caters for a low volume, high-quality market. Mining is carefully regulated. Investment is steady and fairly predictable. Infrastructure in the rangelands supports sustainable communities. High value niche markets are targeted by pastoral producers. Pastoralism is highly valued for the diversity of its products, and its secondary role in the conservation of biodiversity.	*Sustainability before profit* Nature is more important than people. Satisfy basic needs, then promote non-consumptive resource uses. Adapt to Nature, instead of dominating it. Sustainability, the primary value, is supported by strong institutions, with local ownership of resources. Political power is decentralised to self-sustaining regions. Human well-being is measured in terms of access to non-consumptive services, and equity. Aboriginal groups are benefiting from the implementation of land rights law. Pastoralists produce high quality "green" products for niche markets. The conservation of biodiversity takes priority over fibre and meat production. Profits from tightly regulated, low-volume eco-tourism and mining are reinvested in conservation. Investment must meet environmental standards, and targeted towards the long term. Physical infrastructure is primarily designed to improve environmental management, but it also supports rural settlements with balanced age structures.	*Ignore nature and value economic survival* Australia is under economic and social pressure. It clings to the coast and looks outwards to the Pacific Rim and APEC. All available dollars are spend fixing up the social problems of urban Australia. The rangelands are the least of our worries, and occupied by battlers, and those who have opted-out. Society is polarised into rich and poor. Poverty breeds lawlessness. Aboriginal people are marginalised. Resource management institutions have withered. Fibre and meat markets have been lost to new technologies for producing them in vats in consumer countries. Pastoralism is now a subsistence activity. Biodiversity is valued only as a tourist commodity. High volume tourism and mining are located in protected enclaves, which are financially linked to overseas investors. Profits are exported. Capital is invested opportunistically, mostly from overseas. High returns are demanded. Infrastructure supports tourism and mining, elsewhere it is in disrepair. The human population of the rangelands comprises a high proportion of old people, mothers and children - others are in towns trying to earn money to remit home.

Table 2. Key opportunities and downsides identified by workshop participants if the given scenarios were operating in the Australian rangelands in the year 2010.

	Economic Growth	Best Practice	Extra Green	Partial Retreat
Opportunity	• Improved action capability (the "Kerry Packer" syndrome) from more $$, better management and secure title • New enterprises, new markets, vertical integration and horizontal diversification • More philanthropy gives better biodiversity and involvement of Aboriginal people • Fast track development of kangaroo industry	• Uniqueness, unique products, biodiversity and bio-prospecting • Regionalising wealth creation, decentralisation, multiple use and local value-adding • New land uses into which are woven Aboriginal and non-Aboriginal spiritual values	• New economic systems designed to enhance regional economies and retain economic benefits within them • New financial and other institutions to support innovation • Lifestyle settlements in unique locations • Skilful regulation of multi-national corporations	• Hunting and other unique products for the rich • Cheap land and labour attract international investment • A "Carbon Research and Development Corporation" to maximise returns from carbon sinks in rangelands
Downside	• Polarisation, corruption and lowered ethics • No national oversight and increased problems from feral animals, weeds, animal disease and degradation • Marginalisation and depopulation of rangelands with rural poor and loss of Aboriginal and European culture	• Losing individuality, boring, depends on government regulation, and social dislocation • Negative effects of large investors becoming dominant, then "shonky" operations and eventual resource degradation • Highly technology dependent • Controlled by "fringe" dwellers	• Saturation of bushtucker market • Multinational stranglehold • High impact of tourism • Complacency in population leading to system run down	• Water controlled by powerful minorities • Locals unable to keep locally generated benefits • Overseas disease scares (eg BSE) lead to loss in demand for beef and sheep meats

Table 3. Actions identified for four given scenarios in order to capture benefits and avoid downsides. Actions have been grouped broadly into social, economic, resource and technological categories.

	Economic Growth	Best Practice	Extra Green	Partial Retreat
Social	• Freehold ownership of ALL resources to land-owners now • Legislation to "do what you like" since ownership encourages care • Remove protection of native species and develop high value "ecological & cultural" tourism	• Develop "State collaboration" rather than "federal control" • Full regional approach to people-planning-organisation-information and communication • Service providers (government and private) to live in the rangelands	• Establish a Rangelands Commission to take the rangelands our of the State's back yards • Promote rangelands image and awareness through education, media, networks, exchange programs and links to towns and cities • Strong local and regional governments with fairer regional and political representation • Laws on bio-prospecting and intellectual property to retain benefits in the regions	• Empower local communities to control their own futures by building strong, local, long-term visions • Re-build local social networks by education, cultural awareness and promoting self sufficiency • Analyse local problems and local roles and promote self-regulation through peer group pressure
Economic	• Bed tax, 4WD tax and access tax for ALL visitors • Remove government props to poor performers • Invest in road, communication and transport infrastructure to stimulate market potential	• Incentive mechanisms to encourage clean-green production and also to be central to any restructuring process • Mining royalties back to regions and remove tax incentives of fly-in fly-out schemes which do not develop local infrastructure • Identify and cost all non-market values and assess risk of market failure	• Implement natural resource accounting fully • Incentives (stewardship fees and covenants) and penalties to maintain natural capital • Retention of mining and tourism benefits within the region	Same as for "extra green" scenario
Resource	• Maintain all infrastructure as a jumping off place for further development • Implement rich information systems at	• Production systems to be matched to bio-regions by state governments working together	• Regional accountability of water cycle and full user pays • Stringent quarantine systems	• Initiate international carbon-sink agreements for mulga lands and northern savannas

	a regional level (ie, Table 6; see Holmes 1996) • Maintain national quarantine and product quality auditing systems with private support			so funds flow back to regions
Technology	• Market feasibility studies for new products • New exploration and processing technology for mining industry	• Niche marketing and accreditation schemes • Overseas market scan to design new options for clean green products	• Decentralised information and property scale monitoring • National land evaluation • produce Range management games • Bush tucker cultivation	• Establish "appropriate technology" industries in country towns

Table 4. Opinion ratings of the likelihood that Australian rangelands would be operating under one of the four given scenarios in the year 2010, as synthesised from the groups responses. (Rating scale: 4=highly probable, 3=probable, 2=unlikely, 1=highly unlikely 0=no opinion)

Zone	Economic Growth	Best Practice	Extra Green	Partial Retreat
Overall	3	2	2	2
Mulga	2	1	3	3
Chenopod	3	3	3	2
Mitchell Grass	4	3	2	2
Northern	3	3	2	2
Spinifex	2	3	2	2

Table 5. Key elements of two possible directions for Australia's rangelands constructed from comments and attitudes of participants at the Port Augusta conference.

Looking Out	Looking In
A wealthy Australia- a milieu in which the economy can prosper	*Socially rich and viable rangeland communities, nurtured by government policies*
• Tough decisions on viable and non-viable regions Withdrawal of publicly funded support from activities and places that are not financially viable • Investment and decision-making based on high returns to capital. • A decline of population in the rangelands as services are selectively withdrawn. • High-tech communications and production methods to achieve high efficiencies and quality standards • Strong support for vertical and horizontal integration ie. a rich and complex economy giving large multiplier effects and high employment opportunities. Rangeland pastoralism is a minor economic contributor. • Environmental costs fully paid with no negative externalities • Amenity and biodiversity are highly valued under a mix of public and private ownership • The more productive rangeland areas remain primarily under pastoralism. Elsewhere rangelands have become amenity, cultural and biodiversity resources. Some Aboriginal people are integrated into the mainstream economy, others remain marginalised.	• Conscious decisions by Australia nationally that the best interests of the rangelands (cultural, ecological, economic) are served by viable communities located in different and distinct bio-regions • Bottom-up visions which are implemented and resourced at a regional level (eg the regions of Holmes 1996; see Table 6) • Retention of royalties and production values within regions • Each region is centred on a well resourced and well supported hierarchy of settlements which integrate the social and economic life of the region, and link it to the Australian economy • A new set of thoroughly Australian land uses and products which flow in sympathy with the region's inherent potential and its constraints • Reconciliation of our nation's Aboriginal and European peoples

Table 6. A provisional classification Australia's rangeland regions according to major resource policy concerns. (From Holmes, 1996).

Regional Type	Regions
Pastoral Regions	Mitchell Downs (3), Burdekin-Einasleigh (3), Gascoyne-Murchison (5), Gawler-Kingoonya (4), Olary (4), Broken Hill (5) , Wentworth (5)
Remote Pastoral Regions	Channel Country (5), Q. Gulf (5), Barkly (3), Victoria River (6), East/South Kimberley (5)
Stressed Pastoral Regions	Q. Mulga (4), Bourke-Cobar (3)
Urban-Dominated Mining Regions	Mt Isa (4), Pilbara (6), Goldfields (3)
Urban-Dominated Tourist Regions	Alice Springs (8), Darwin (6), Flinders Range (7)
Aboriginal Homelands	Arnhem (9), Great Sandy (8), Simpson-Tanami-Petermann (9), Maralinga-Pitjantjatjara (9)
'Frontier' Regions in Flux	Peninsula (9), N.T. Gulf (7), Sandover (7), North Kimberley (9), Lake Eyre (8)