Chapter 8

Salinity management into the future

> I think the programs that are in place should be seen as priming the longer term process, because it is a problem of such magnitude and such timescale. It is also trying to get people engaged in something that they will have no real ownership of the solutions for and the people who benefit from the solutions will probably be future generations. It is about getting away from: 'It is not really my problem, I am dealing with things that affect me here and now,' which I hear quite often. It is getting over that that is an important barrier.[1]

8.1 In this report the Committee has considered the extent and economic impact of salinity, focusing attention on the efficacy of current arrangements to manage salinity across Australia. As discussed in Chapter 2, as more detailed mapping of areas potentially threatened by rising saline watertables has taken place, our knowledge of which parts of the landscape are likely to be damaged by salinity has improved and the extent of land 'at risk' has been revised down. At the same time, a better understanding of the hydro-geology of these landscapes along with better modelling of the impacts of intervention techniques on groundwater recharge, has led us to revise up the amount of intervention required and the time it will take to have a measurable effect. Witnesses emphasised the long-term nature of salinity, noting that it can take years to manifest and could take years to remedy:

> Salinity is the result of complex interactions between biophysical and socioeconomic factors, which have taken considerable time to become evident in many landscapes (50 or more years in some cases). Remediation measures are likely to require a similar time frame to be effective.[2]

8.2 The Committee was encouraged to hear that the commitment of COAG in 2000 to manage salinity and water quality through the NAP has greatly enhanced public awareness of the problem. At the same time, the Australian Government has invested in some major research and on-ground projects. The Committee applauds these achievements. However, given the time-scale of this problem, managing salinity into the future will require an ongoing commitment from all levels of government. And, as with any major program or set of programs, there is always scope for improvement.

8.3 In this chapter the Committee outlines its conclusions and provides recommendations to build on the work that has taken place over the last five years. The first section of the chapter provides a brief précis of progress against

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1 Professor Les Copeland, Centre for Salinity Assessment and Management, University of Sydney, *Committee Hansard*, 14 October 2005, p. 38.

2 Centre for Salinity Assessment and Management, University of Sydney, *Submission 17*, p. 1.

recommendations from the House of Representatives Science and Innovation Committee's report, *Science Overcoming Salinity*. This is followed by a summary of the major issues that emerged in this inquiry with accompanying recommendations.

The House of Representatives Report

8.4 As discussed in Chapter 2, the House of Representatives Report concentrated on the use of the salinity science base and research data in the implementation of national programs. A total of 24 recommendations were made across the following areas:

- the nation's programs to combat salinity
- the salinity science base
- the coordination of salinity research
- the adequacy of the science base, research needs and funding
- data management and mapping technologies
- support for implementers: extending the science

The nation's programs to combat salinity

8.5 It was recommended that 'mechanisms be developed to ensure that validated salinity research findings are considered in regional planning processes' (recommendation 1).

8.6 This Committee considers that simple measures to improve the accessibility of the latest scientific research could greatly enhance the effectiveness of regional planning processes and on-the-ground action. It is suggested that what is needed is the combination of better coordination between research providers in the type of research undertaken and the kind of data collected, together with better integration and communication of research results to deliver information that is relevant to the needs of regional groups in language they can understand. The synthesis products developed by the National Dryland Salinity Program (NDSP) are considered excellent examples of what is possible. However, more work is needed to make this information accessible to those who need it, and to update it and interpret it to meet the needs of particular regional and producer groups. By undertaking this coordination, the Australian Government would greatly improve the effectiveness of its investments in salinity mitigation and increase the capacity of regional bodies to use the latest science to make good investment decisions.

The salinity science base

8.7 It was recommended that 'the Australian Government, in cooperation with state agencies, conduct an audit of the totality of salinity research and development activities undertaken by all agencies and programs in which the Australian Government invests' (recommendation 2).

8.8 The Australian Government response to this recommendation reported on the synthesis of salinity-related research and development activities completed under the NDSP[3] – which had in fact been undertaken and completed before the House of Representatives Inquiry had concluded and represented a synthesis of older R&D activity which took place before the NAP regional approach was fully developed. As noted above, the Committee believes the NDSP products provide an extremely valuable resource for those working in salinity management, including NAP regional bodies. However, the Committee notes that recommendation 2 called for a comprehensive audit of salinity R&D activities across *all* agencies and programs in which the Australian Government invests. The NDSP products are, in the main, a synthesis of work undertaken by NDSP partners. The Committee believes an audit should be undertaken. Further, there is an ongoing need for a research gap analysis which looks across the totality of Australian salinity R&D efforts, compares this to our priority landscapes and the needs of NAP regional bodies to develop future R&D priorities. A dedicated body should be established to achieve this (discussed below).

The coordination of salinity research

8.9 It was recommended that the National Dryland Salinity Program (NDSP) be continued with an expanded role to address irrigation and urban salinity, and renamed to reflect this expanded role (recommendation 3).

8.10 The Government response to this recommendation notes that while the NDSP has not been re-instated a number of other initiatives have continued to build on existing research. Further, the Natural Resource Management Ministerial Council has recently established an Executive Steering Committee on Australian Salinity Information, which is responsible for coordinating salinity information.[4] The Government response seems to miss the main point of the original recommendation – that it is the effective coordination of salinity R&D (to ensure it is well targeted to priority areas and avoids duplication) that is at issue, rather than the amount of research conducted or the pooling of the resulting information.

8.11 The loss of the NDSP and the coordination gap this has left emerged as a major issue in this inquiry. The Committee believes this should be addressed as a matter of urgency (discussed below).

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3 The Australian Government Response to the House of Representatives Standing Committee on Science and Innovation May 2004 Report *Science Overcoming Salinity: Coordinating and extending the science to address the nation's salinity problem*, December 2005, p. 4, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf (accessed 31 January 2006).

4 The Australian Government Response to the House of Representatives Standing Committee on Science and Innovation May 2004 Report *Science Overcoming Salinity: Coordinating and extending the science to address the nation's salinity problem*, December 2005, pp 4-5, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf (accessed 31 January 2006).

The adequacy of the science base, research needs and funding

8.12 Nine recommendations were made. Firstly, it was recommended that 'the Australian Government give greater emphasis through its investments in salinity science to develop new, economically viable land and water use systems' (recommendation 4). It was further recommended that 'the Australian Government encourage Research and Development Corporations to invest more in sustainable land use systems and new salinity technologies' (recommendation 9).

8.13 This Committee notes that the Government has continued to support research in this area through its primary industry research and development corporations and relevant CRCs. It is worth noting that these R&D efforts are a result of the investment priorities and decisions of individual industry Research and Development Corporations and the CRC Program and do not represent a coordinated Government response to these recommendations. Ongoing funding to these projects is by no means guaranteed and the future of 'public good' CRCs has been called into question by changes to CRC Program funding guidelines.

8.14 It was recommended that 'the Australian Government encourage catchment management organisations to introduce industry development planning into their natural resource management planning and funding prioritisation process' (recommendation 5).

8.15 This Committee acknowledges the Government's indication of support for this recommendation and the emphasis given to industry/regional body collaboration in the national programs. However, the Committee believes that collaboration between regional bodies and industry could be greatly enhanced if dedicated funding was provided for regional-industry research partnerships (discussed below).

8.16 It was recommended that 'the Australian Government emphasise, through its investment in salinity science, the development of technologies to address urban salinity' (recommendation 6).

8.17 In the Government's response to this recommendation it is noted that 'measures to address urban salinity are within the scope of existing support for salinity'. The CSIRO's program, Water for a Healthy Country Flagship, and the Rural Towns – Liquid Assets project in WA are provided as examples.[5]

8.18 Notwithstanding the importance of the projects mentioned, urban salinity clearly remains a seriously neglected area, with the administering national departments pointing out their portfolios naturally emphasise salinity in agricultural

5 The Australian Government Response to the House of Representatives Standing Committee on Science and Innovation May 2004 Report *Science Overcoming Salinity: Coordinating and extending the science to address the nation's salinity problem*, December 2005, p. 7, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf (accessed 31 January 2006).

areas.[6] As discussed later in this chapter, the Committee believes a lot more needs to be done to address urban salinity.

8.19 It was recommended that the Australian Government 'foster greater cooperation amongst scientists' through an annual salinity conference and 'examine ways to foster interdisciplinary research in natural resource management' (recommendation 7).

8.20 The Government noted its support for this recommendation and reported on several forums that bring together scientists, policy makers and other stakeholders, for example:

- The 'Productive Use and Rehabilitation of Saline Lands' group, which includes representatives from all states/territories, several industry groups, CSIRO, research and development corporations and farmers. The group operates through convened conferences.
- The Cooperative Research Centre for Plant-Based Management of Dryland Salinity's 2004 conference.
- The Basin Salinity Modelling Forum established by the Murray Darling Basin Commission.

8.21 The Government further noted that the newly established Executive Steering Committee for Australian Salinity Information will provide a forum for national leadership and coordination. On this basis, the Australian Government concluded that this recommendation 'is being substantially addressed'.[7]

8.22 The Committee acknowledges all current efforts that encourage cross-fertilisation of ideas and exchange of information. However, the Committee notes that each of these examples are limited in scope to particular end users (production from saline lands, plant-based research, hydro-geological modelling) and are not necessarily ongoing. To this end, the Committee believes that there is still a place for (1) an annual conference that specifically meets the information and networking needs of NAP regional groups (2) regular events to ensure information sharing across the totality of all salinity research and development. The Committee encourages the Australian Government, through the Executive Steering Committee for Salinity Information, to pursue this.

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6 Mr Aldred, Department of Agriculture, Fisheries and Forestry, *Committee Hansard*, 28 February 2006, p. 37.

7 The Australian Government Response to the House of Representatives Standing Committee on Science and Innovation May 2004 Report *Science Overcoming Salinity: Coordinating and extending the science to address the nation's salinity problem*, December 2005, p. 9, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf (accessed 31 January 2006).

8.23 It was recommended that provision be made within the NAP for the establishment of a salinity research and development fund for research of national or statewide significance that 'pertains to the development of new technologies and industries for salinity management' (recommendation 8).

8.24 In the Australian Government's response to this recommendation it was noted that the states and territories do not support a separate national R&D fund. That is, they do not support allocating resources from each bilateral process into a multilateral, national program. The Government reported that there are several existing mechanisms (outside the NAP) through which the Australian Government invests in research of national significance.[8]

8.25 The Committee appreciates that important work on salinity is being undertaken at a national level by ventures and organisations in which the Australian Government invests. The Committee further notes that WA has established a strategic reserve with NAP funds to address issues of state-wide significance.[9] However, evidence in the inquiry suggests that more needs to be done on a national scale to address gaps in research and, importantly, its communication to on-ground workers. This is discussed later in the chapter.

8.26 It was recommended that the Australian and state/territory governments 'remove impediments' for regional bodies to 'undertake or commission research', 'provide incentives for greater collaboration' between regional bodies for research of cross-catchment benefit and provide support to evaluate tenders and contracts at the regional level (recommendation 10).

8.27 The Australian Government response noted that the main role of regional bodies is to implement on-ground works and that contributions to research by regional bodies were made on an in-kind basis.[10]

8.28 As discussed in Chapter 5, the Committee believes that for regional bodies to establish and maximise partnerships with industry and researchers, and ensure that regional needs are included in national research priority setting, discrete research funding is required (discussed below). It is important to recognise that results from

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8 The Australian Government Response to the House of Representatives Standing Committee on Science and Innovation May 2004 Report *Science Overcoming Salinity: Coordinating and extending the science to address the nation's salinity problem*, December 2005, p. 9, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf (accessed 31 January 2006).

9 Mr Fred Tromp, WA Department of Environment, *Committee Hansard*, 18 November 2005, p. 9.

10 The Australian Government Response to the House of Representatives Standing Committee on Science and Innovation May 2004 Report *Science Overcoming Salinity: Coordinating and extending the science to address the nation's salinity problem*, December 2005, p. 11, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf (accessed 31 January 2006).

national research projects are not necessarily immediately applicable at a regional or local level and may require region-specific research to interpret and adapt research outcomes to meet the needs of regional bodies or local producers.

8.29 It was recommended that 'the Australian Government examine ways to encourage private sector investment in research and development for commercial measures to arrest salinity' (recommendation 11). Further, it was recommended that the Government, in cooperation with the states, 'encourage development of industry capacity in salinity research and development' by ensuring tender specifications provide opportunities for industry to compete for public research funds and that tendering processes are transparent (recommendation 12).

8.30 This Committee notes that the Australian Government provides a number of incentives and mechanisms to encourage private sector investment in salinity and NRM research and development. The Cooperative Research Centre model, for example, is designed to build links between researchers and industry. At the same time, levies from Australian industries contribute to research through the Research and Development Corporations. Various tax incentives also encourage private sector investment in R&D.

8.31 While the Committee commends these activities, evidence suggests that large-scale private investment remains largely untapped. The Committee believes that large-scale private investment is required to develop substantial commercial measures to mitigate salinity.

8.32 No evidence was received on tendering processes. However, this Committee notes that Australian Government tendering processes adhere to the Commonwealth Procurement Guidelines for procurement of good and services. These are based on best-practice principles.[11]

Data management and mapping technologies

8.33 It was recommended that relevant Australian and state government agencies 'accelerate the development of data collection, management, and retrieval systems that are standardised, integrated and accessible' (recommendation 13).

8.34 The importance of consistent standards and protocols for data collection and management was emphasised in evidence received. This Committee understands that the Australian and state/territory governments recognise the importance of standardised and accessible data and are working towards this through their support of the National Land and Water Resources Audit. The Committee was particularly

11 The Australian Government Response to the House of Representatives Standing Committee on Science and Innovation May 2004 Report *Science Overcoming Salinity: Coordinating and extending the science to address the nation's salinity problem*, December 2005, p. 13, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf (accessed 31 January 2006).

heartened to hear that the newly established Executive Steering Committee on Australian Salinity Information will work towards improvements in data collection and management.

8.35 It was recommended that ANZLIC, the spatial information council, and the National Land and Water Resources Audit 'be resourced to support managers of regional projects to develop and implement best practice data management policies' (recommendation 14).

8.36 The Government response to this recommendation reported that ANZLIC and the NLWRA have produced a toolkit, which provides resource materials to build the capacity to manage data and information at regional and local levels. The toolkit is available online. Further, the Audit is coordinating various efforts to achieve consistency in data management and sharing.[12]

8.37 The Committee received limited evidence on this recommendation.

Support for implementers: extending the science

8.38 Ten recommendations were made in this area. The first recommendation advised that the Australian and state/territory governments 'build on existing initiatives to establish a database of interpretive material, scientific research and data' (recommendation 15).

8.39 The Government response reported that this recommendation is being addressed through current data management arrangements. It was noted that the National Land and Water Resources Audit has developed the Australian Natural Resource Atlas. The Atlas provides access to a database of interpretive, scientific research and natural resource data. It was further noted that information is available from the Australian Government Natural Resource Management website, the NDSP website, the CRC for Plant-based Management of Dryland Salinity website, the CRC for Landscape Environments and Mineral Exploration website, Land & Water Australia website, and the Murray-Darling Basin Commission website.[13]

8.40 Whilst this Committee appreciates that all of the above are valuable resources, evidence suggested there is still a need for a 'one-stop-shop' for accessible, up-to-date information. This is discussed later in the chapter.

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12 The Australian Government Response to the House of Representatives Standing Committee on Science and Innovation May 2004 Report *Science Overcoming Salinity: Coordinating and extending the science to address the nation's salinity problem*, December 2005, p. 15, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf, (accessed 31 January 2006).

13 The Australian Government Response to the House of Representatives Standing Committee on Science and Innovation May 2004 Report *Science Overcoming Salinity: Coordinating and extending the science to address the nation's salinity problem*, December 2005, p. 16, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf (accessed 31 January 2006).

8.41 The remaining recommendations focused on extension/knowledge brokering services:

- Recommendation 16 – Australian and state/territory governments and industry groups to 'enhance their support for face-to-face extension services'
- Recommendation 17 – that a state-by-state manual of viable salinity management options be published to assist extension staff and land managers
- Recommendation 18 – that the issue of diminshing state extension services be reviewed with a focus on employment conditions and the potential career pathways of extension staff and the adequacy of training
- Recommendation 19 – that an audit of the national, state and regional extensions services available for salinity management be undertaken
- Recommendation 20 – that 'the effectiveness of the National Landcare Program's state and regional resource management facilitator' be reviewed
- Recommendation 21 – that 'the extension services provided to the Australian Government, and participating states and territories, through the NAP and the NHT be reviewed' with a focus on employment conditions, career pathways and training
- Recommendation 22 – that the support of regional bodies be increased through a 'review to assess the effectiveness of providing groups of mobile knowledge brokers' who advise on NRM policies and salinity issues, and the provision of funding for the operations of knowledge broker groups
- Recommendation 23 – that a national annual forum on salinity policy, research and management for government agency staff, regional bodies, private consultants, farmers and other land managers be supported
- Recommendation 24 – that the Australian Government 'remove impediments to the further development of an industry in technical and support services for environmental management', and establish an accreditation process for private sector salinity advisors

8.42 The Australian Government response to the recommendations highlighted the fact that extension services are principally the responsibility of the states and territories. This was re-affirmed in Australian Government departmental evidence to this inquiry. However, it was noted that the Australian government funds a network of 117 facilitators throughout Australia to assist land managers and industry groups. Further, the Government contributes to the funding of over 650 local and regional level facilitators supporting the transition to improved NRM practices.[14]

14 The Australian Government Response to the House of Representatives Standing Committee on Science and Innovation May 2004 Report *Science Overcoming Salinity: Coordinating and extending the science to address the nation's salinity problem*, December 2005, p. 17, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf, (accessed 31 January 2006).

8.43 In its response, the Australian Government further reported the following:

- Under the regional delivery model, it is the responsibility of regional bodies to identify and fund their need for extension/knowledge brokering services.
- The employment conditions, career pathways and training of extension staff are the responsibility of the individual employment body (which may be the Australian government, a state government, regional body or local council).
- The Government supports the holding of a national forum and sponsors the Productive Use and Rehabilitation of Saline Lands group.
- In 2003, the Government completed a scoping study into the inclusion of salinity and water quality training in the Conservation and Land Management Training Package under the Vocational Education and Training accreditation system. The Government is currently looking at the development of an operational plan to deliver and support the salinity and water education and training stream under the Conservation and Land Management Training Package.
- Other training/accreditation initiatives for salinity advisers have/are being undertaken by the Rural Industries Research and Development Corporation, the NSW Southern salinity Action Team and the CRC for Plant-Based Management of Dryland Salinity.

8.44 This Committee heard a considerable amount of evidence that argued the need for increased extension services and improved employment conditions for extension workers. The Committee notes that while extension services have predominantly been the responsibility of the states/territories, the move to the regional delivery model requires a different approach with greater Australian Government involvement. Further, it was clear from evidence received that not all regional bodies currently have the capacity to identify and implement their extension needs. This Committee suggests that an examination of the extension needs of regional bodies could show ways in which the national coordination, sourcing and professional development of regional extension officers may add substantial value to the efforts of regional bodies. This is discussed later in the chapter.

Improving salinity management in Australia

8.45 This section outlines the Committee's conclusions and recommendations to improve salinity management in Australia.

National Programs

Funding

> [The NAP] is a major step forward in giving salinity a national focus and getting cooperation between the states and the Commonwealth and getting cooperation between the departments at a federal level. The fact that there is now a joint natural resource management team within the Australian

> government linking together the departments of environment and agriculture is a very promising and very welcome change.[15]

8.46 As discussed in Chapter 3, witnesses were very positive about the heightened attention that the NAP and other national programs have brought to the issue of salinity. Increased public awareness, improved coordination between the Australian and state/territory governments and significant advances in research were some of the benefits conveyed to the Committee. However, some 'teething problems' were brought to the Committee's attention, - most notably, delays in negotiating the bi-lateral agreements – and suggestions were made to streamline and improve the national programs.

8.47 Perhaps the strongest message communicated to the Committee was that the NAP has provided a good start or solid basis from which to continue the task of managing salinity. Many regional bodies are still finding their feet and the salinity problem itself is not conducive to short-term intervention. Substantial ongoing investment is essential.

Recommendation 1

8.48 The Committee recommends that the Australian Government and the state/territory governments extend the National Action Plan for Salinity and Water Quality for a further 10 years, with matched funding at least commensurate (on a per year average basis) with the first stage NAP funding. It is recommended that negotiations over the future of the NAP be expedited to provide certainty to regional bodies and other stakeholders. It is recommended that any further consideration of the prioritisation of NAP funds include consultation with the states/territories and the wider community.

Recommendation 2

8.49 The Committee recommends that the Australian Government extend the Natural Heritage Trust for a further 10 years with funding at least commensurate (on a per year average basis) with existing funding levels.

8.50 Short-term funding cycles for regional bodies results in uncertainty at both a planning and staffing level. As outlined in Chapter 3, the Committee heard that regional bodies on short-term (12-18 month) funding were finding it difficult to attract and retain experienced staff. Lack of continuity between funding rounds exacerbated the problem. In turn, this has resulted in a loss of corporate knowledge and, coextensively, decreased capacity in some regional bodies. The Committee appreciates that short-term funding cycles were temporarily introduced for regional bodies lacking the capacity to manage large funds. The Committee further understands that the Australian Government Departments of Agriculture, Fisheries and Forestry

15 Mr Corey Watts, Acting Manager, Land and Water Program, Australian Conservation Foundation, *Committee Hansard*, 28 February 2006, pp 25-26.

and the Environment and Heritage are working with relevant state/territory agencies to support regions in longer-term (3-year) planning.

Recommendation 3

8.51 The Committee recommends that the Australian Government in cooperation with the states and territories continues to give priority to longer-term funding cycles and measures to ensure the continuity of funding so that where existing staff are likely to be continuing in a role there is no break in wages and the organisation's intellectual capital is not lost.

The Governance Framework

8.52 A principal design feature of the NAP is clearly articulated roles for the Australian, state/territory and local governments and the community. The Committee heard that roles and responsibilities between local government and regional bodies were not always clearly demarcated and duplication occurred.

8.53 The principal area of concern raised from a local government perspective was the granting of legislative powers to regional bodies. However, with some notable exceptions, there was also significant concern that many local governments are not across salinity and other NRM issues or using their planning powers to support salinity management.

8.54 The Committee believes that achieving clarity of roles between regional bodies and local government will require the following: improved education of local government in NRM matters, tighter requirements on local government to incorporate NRM principles in their planning decisions, and greater communication between local government and regional bodies.

8.55 The Committee acknowledges the valuable role that local governments can (and often do) play in the management of salinity. In particular, the Committee's site inspection in Wagga Wagga, NSW, highlighted the influential role that local government can take in managing salinity. The work undertaken by Wagga Wagga City Council (discussed in Chapter 6) provides an excellent example of good practice that could assist other councils as they take on the task of salinity education and management. However, as discussed later in this chapter, the Committee heard that local governments are not adequately funded to undertake this role. The recommendations below should be implemented in conjunction with recommendations 20 and 21.

Recommendation 4

8.56 The Committee recommends that the Australian Government work with the state/territory governments and local government peak bodies to ensure that all local governments are adequately educated in, and have access to, salinity management information relevant to their locality. This will include the development of mechanisms to help local governments build and share capacity, knowledge and experience.

Recommendation 5

8.57 The Committee recommends that the Australian Government work with the state/territory governments to encourage reform of local government legislation to place a requirement on all local municipalities to align planning decisions with natural resource management principles and priorities.

8.58 As discussed in Chapter 4, the legislative arrangements for regional bodies vary across the country: some have statutory powers while others do not. The legislative status of regional bodies has led to confusion between local government and regional bodies over roles, responsibilities and powers in some states/territories. Whilst not applicable to all jurisdictions, the Committee believes there is room to improve the situation and reduce the current level of confusion.

Recommendation 6

8.59 The Committee recommends that, where applicable, the Australian and relevant state/territory governments examine the issue of statutory powers for regional bodies to address the current level of confusion between local government and regional bodies.

8.60 Control of land clearing is essential to the management of salinity. The Committee was particularly troubled to hear that land clearing is still not being regulated effectively in some areas. In some cases, local government is failing to exercise its regulatory powers in the decision-making process. At the same time, concerns were raised that some state governments are not adequately monitoring compliance with land-clearing regulations.

8.61 The Committee notes that in the Council of Australian Government's publication *A National Action Plan for Salinity and Water Quality* it states:

> Recognising the fact that land clearing in salinity risk areas is a primary cause of dryland salinity, effective controls on land clearing are required in each jurisdiction:
>
> - any Commonwealth investment in catchment/region plans will be contingent upon land clearing being prohibited in areas where it would lead to unacceptable land or water degradation; and
> - the Commonwealth will require agreement from relevant States/Territories (particularly Queensland, New South Wales and Tasmania) that their vegetation management regulations are effectively used or, where necessary, amended to combat salinity and water quality issues.[16]

8.62 Whilst the regulation of land-clearing is primarily the responsibility of the state/territories and local governments, the National Action Plan is clear that

16 Council of Australian Governments, *A National Action Plan for Salinity and Water Quality*, 2000, p. 9.

Australian Government investment is contingent on appropriate land-clearing controls being in place and enforced. While the Committee recognises that the Australian Government is trialling market-based instruments (MBIs) as a means of influencing land-use behaviour, the Committee believes that greater national leadership on the issue of regulatory compliance is required. There is definitely scope for greater insistence by the Australian Government that land clearing is being adequately controlled in each state and territory before Australian Government funds are provided to that jurisdiction.

Recommendation 7

8.63 The Committee recommends that the Australian Government, through the Natural Resource Management Ministerial Council, seek greater assurance from the states/territories that land-clearing is being effectively regulated. It is recommended that extensions to the NAP funding be conditional on the states/territories meeting more rigorous accountability measures.

Enhancing the capacity of regional bodies

> The success of Federal Programs hinges to a large extent on the level of knowledge and expertise of the agencies and individuals charged with the development and implementation of catchment management strategies and plans. Currently, the level of expertise across catchment management authorities and agencies varies considerably across Australia.[17]

8.64 While there was strong support for the regional delivery model, the Committee heard that the performance of regional bodies was uneven: some organisations performed well, while others struggled. As discussed in Chapter 4, the major obstacles identified were:

- inadequate standards of corporate governance and local capacity
- an inadequate accreditation process
- limited access to local current data
- limited ability to apply research at a catchment scale

8.65 The last two of these four points is dealt with in the sections on research later in this chapter.

Corporate Governance Guidance

8.66 The Committee recognises that regional bodies have not commenced from an equal starting point under the new regional delivery arrangements. Establishing sound corporate governance arrangements will provide a stable basis from which to build the capacity of regional bodies.

17 CSIRO, *Submission 15*, p. 5.

8.67 The Committee notes that the ANAO report recommended that the Australian and state/territory governments work together to:

> [develop] appropriate corporate governance templates and core training/information to enhance the capacity of regional bodies to meet sound corporate governance practices.[18]

8.68 Further, the NRMMC Regional Implementation Working Group proposed that guidelines on best practice in governance and accountability be established by the states/territories.[19]

Recommendation 8

8.69 The Committee recommends that the Australian Government, as a matter of urgency, work in cooperation with the states/territories to implement the Australian National Audit Office's recommendation to develop corporate governance templates and core training.

The accreditation process

8.70 The Committee heard that there was a need to improve the accreditation process to provide quality assurance and consistency in regional investment planning. As a number of witnesses attested, the performance of regional bodies has, to-date, been varied. The CRC for Plant-Based Management of Dryland Salinity explained that a stronger accreditation process, which focused on a much more rigorous approach to investment decision-making, is required.[20] The following recommendation should be read in conjunction with recommendation 22.

Recommendation 9

8.71 The Committee recommends that the Australian Government, in cooperation with the states and territories, strengthen the accreditation process for regional bodies. The improved process will ensure that funding is conditional on rigorous investment planning, where decisions are:

- **Based in sound, up-to-date science**
- **Outcome-focused**
- **Subject to a cost-benefit analysis**

Coordinating and communicating research

> One of the overarching issues identified by the House of Representatives' inquiry was the lack of coordination of salinity research across the country

18 Australian National Audit Office, *The Administration of the National Action Plan for Salinity and Water Quality*, Audit Report No. 17 2004-2005, p. 84.

19 Department of Agriculture, Fisheries and Forestry and Department of the Environment and Heritage, *Submission 24*, Attachment I, p. 5.

20 CRC for Plant-Based Management of Dryland Salinity, *Submission 18*, p. 1.

> following the demise of the National Dryland Salinity Program. This was highlighted by the fact that 11 out of 24 of their recommendations relied on the existence of an overarching coordinating entity to guide investment, planning and extension. Such a governing structure has yet to be developed as only part of the science coordination and brokering issues are addressed by the recent Executive Steering Committee for Australian Salinity Information (ESCASI) initiative but it provides a starting point.[21]

8.72 As discussed in Chapter 5, it was clear from evidence received that the National Dryland Salinity Program (NDSP) was strongly regarded and influential in its time. It provided a platform for key partners to work together, a forum for information and knowledge exchange, and enabled the development of a suite of accessible products for use by landholders, regional and industry groups, and researchers. It was also clear that there is an ongoing and urgent need for a similar vehicle.

8.73 Some witnesses supported the re-instatement of the NDSP as recommended in the House of Representatives Report. However not all former NDSP partners were convinced the NDSP was the appropriate vehicle and argued that a new vehicle was needed that could play a similar role in the changed NAP environment.

8.74 The Committee believes there is a critical need for a body that can undertake 'big picture' analysis of research gaps and ensure that research is coordinated to avoid duplication and capture all national research priorities.

8.75 There is a need for this national coordinating body to be able to leverage or commission research to meet these R&D priorities and ensure research management processes and protocols are in place so that research delivers useful outputs that meet the needs of research users. This means having some funding and research management capacity, but it would be expected that the actual R&D would be undertaken collaboratively by existing research providers.

8.76 A central one-stop-shop is required to meet the information needs of regional bodies, producer groups, and community organisations. This means there is a need for national R&D protocols to ensure that data from different projects or regions is transferable and interpretable. Along with this, the coordinating body must have some leverage with R&D providers to ensure compliance. A central database alone is of limited use in the absence of a capacity to interpret and make effective use of the data. There is a strong argument for a pool of knowledge brokers with expertise in particular areas, who are able to find and interpret relevant information for particular target groups (catchment managers, producers, local government etc).

8.77 This new organisation is likely to be made more effective if there is a clear articulation of the research, development and extension (RD&E) process, which

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21 CSIRO, *Submission 15*, p. 9.

outlines the roles, responsibilities and relevance of the players at different levels to ensure clear communication pathways and expectations.

8.78 As recommended in the House of Representatives Report (recommendation 2), the Committee believes there is a need for an audit of all salinity research and development activities in which the Australian Government invests. This will be an integral step in identifying critical research gaps and modifying research priorities.

8.79 An audit of ongoing R&D and an analysis of existing and future R&D gaps could also develop a clear process for mapping the extent of the problem across target landscapes against current and emerging salinity mitigation measures to prioritise future R&D investment. The aim would be to perform a cost-benefit analysis of the extent of particular landform and land use types, the relative value of assets at risk, and the cost, timeframe and likelihood of success of R&D efforts to develop targeted solutions.

Research scale

8.80 Evidence suggests there is a need for a mix of 'big picture' research and a need for collaborative research at the regional level, which takes the 'big picture' research outcomes and delivers R&D that provides solutions relevant to regional conditions, needs and production systems. The Committee recognises that there is significant 'big picture' work being undertaken through organisations and initiatives in which the Australian Government invests. However, the Committee believes that there is an unfulfilled role to undertake or commission research not currently covered through existing channels. Further, there is also a requirement to ensure effective coordination of salinity R&D at the national and regional levels.

8.81 This would allow regional bodies and producer groups to pick up the outputs of national research projects and apply them to their local conditions to provide the kind of information that meets their planning and extension needs (adapting to local conditions, demonstrating to local producers etc). Regional bodies would not be expected to have the R&D or research management capacity to commission or undertake these projects themselves. Rather, they would need to have the funding leverage to partner existing R&D providers in these projects to ensure that their needs and priorities are met.

Recommendation 10

8.82 The Committee recommends that the Australian Government establish an independent body to coordinate salinity research. This body will:

- **Maintain a focus on dryland, irrigation and urban salinity**
- **Identify and prioritise gaps in research across all research scales**
- **Leverage research from existing providers where priority gaps are identified**
- **Provide a 'one-stop-shop' for salinity research and information**

- **Develop and maintain a website that provides a gateway to all relevant research, policy and practice**
- **Ensure that research is able to be connected up and used at different scales**

Recommendation 11

8.83 The Committee recommends that the newly established coordinating body undertake, as one of its first pieces of work, a comprehensive audit of all salinity research and development activities in which the Australian Government invests. This will include:

- **National programs**
- **Agencies within government departments**
- **Cooperative Research Centres**
- **Research and Development Corporations**
- **National science agencies**
- **Universities**
- **Independent research centres**
- **Industry initiatives**
- **R&D needs for the development of new large-scale sustainable industries**

8.84 Research at a regional scale is currently largely unfunded or carried out on an ad hoc basis, with funding to regional bodies dedicated to on-ground works. The Committee believes that for regional bodies to establish and maximise partnerships with researchers and industry bodies for regional-scale research, discrete research funding is required. Further, research funding for regional bodies will facilitate the incorporation of regional needs and priorities into research priority-setting at a national level.

Recommendation 12

8.85 The Committee recommends that discrete funding be allocated in the new (post-2008) NAP funding for regional bodies to partner in regional scale research to deliver R&D outcomes that are more relevant to their regional priorities and needs. It is recommended that all research proposals be assessed by the newly created coordination body to avoid duplication of research efforts.

NDSP Products

8.86 The National Dryland Salinity Program (NDSP) products, compiled in the final stage of the NDSP, are invaluable resources for the broad range of stakeholders involved in salinity management. The Committee was concerned to hear that these products are not currently widely known of or used and there is no capacity to update them.

Recommendation 13

8.87 The Committee recommends, as a matter of urgency, that specific funds be allocated by the Australian Government for the promotion and distribution of the NDSP products – in particular, to regional bodies across Australia. It is further recommended that the newly established coordination body (see recommendation 10) take on the role of updating these products.

Extension services

8.88 A major theme in this inquiry was the decline in extension services and employment opportunities for extension workers. This was also given considerable attention in the House of Representatives Report. The Committee is disappointed that in spite of the emphasis on extension services in the House of Representatives inquiry, this issue continues to be neglected. Extension officers and knowledge brokers play a vital role in ensuring that science is communicated to on-ground workers in an accessible, user-friendly manner. In turn, the capacity for regional bodies to effectively deliver useful and targeted information will be crucial to their ability to impact on salinity.

8.89 The Committee recognises that extension services, in the past, have primarily been the responsibility of the states and territories. However, as noted earlier in the chapter, evidence suggests that state extension services do not adequately fit the regional delivery model. In its response to the House of Representatives recommendations, the Australian Government noted that regional bodies are required to identify and fund their need for extensions services within the context of their regional plans and investment strategies. As this requirement is part of the Australian Government and states/territories jointly agreed regional model, the Committee believes the Australian Government has a responsibility to ensure that appropriate extensions services are available.

8.90 Further, the Committee notes that not all regional bodies are well placed to identify and manage their extension needs and some support is required. To this end, the Committee believes the Australian Government should take a lead in identifying extension service issues and developing options for addressing these issues. Specifically, the role for the Australian Government is in improving employment and training for extension workers to meet the needs of regional groups.

8.91 The most effective means of delivering different kinds of information to different target groups to ensure they have the knowledge, capacity and support to undertake land use change must be determined. To achieve this, there is a need to articulate the relative roles and capacity of state, regional and private extension services and to look at how to encourage the most effective and constructive relationship between these three groups, R&D providers and R&D users (including regional bodies, land managers and local government).

8.92 Given the extension needs of regional groups and mindful of the range of demands placed on them and variation in their management capacity, there is much to

be gained by the national coordination of the professional development of regional extension officers. Relatively minor activities, such as helping regional groups to appoint extension officers and articulate their job descriptions, to providing a national forum for communication and knowledge exchange, could greatly increase the effectiveness of regional extension personnel.

8.93 There is a role for using the existing level of extension experience within state agencies to contribute to the education and professional development of both regional and private extension providers. This has been demonstrated in the CRC for Plant-Based Management of Dryland Salinity's collaborative project with Landmark private agronomists.[22] A network has been developed in which private agronomists provide one-on-one support to their clients in adopting sustainable new farming systems, with support and referral from state extension staff.

Recommendation 14

8.94 The Committee recommends that the Australian Government establish a working group to identify extension service issues and options for addressing these. Particular attention should be paid to:

- **The relationship between state, regional and private extension services**
- **The employment conditions, professional development and career pathways of regional extension staff**
- **Achieving nationally consistent and relevant training of extension staff, including the development of accredited courses for private extension staff that provide knowledge and skills in NRM and increase their awareness of, and engagement with, relevant regional plans**
- **Ensuring that extension services meet the needs of regional groups**

Research gaps

Viable salinity solutions and new industry development

8.95 On-ground action by regional bodies can only succeed if there are regionally suitable, viable solutions for salinity mitigation or prevention. The Committee appreciates the frustration of some stakeholders that on-ground action has been delayed by the regional planning process and, as discussed above, recommends greater support and guidance to regional bodies in this regard. However, of equal concern was evidence suggesting that on-ground action is going ahead before viable management options are available or have been properly targeted and developed to meet regional needs.

22 CRC for Plant-Based Management of Dryland Salinity website, http://www.crcsalinity.com/programs/index.php?disptype=projects&id=22 (accessed 22 march 2006).

8.96 Whilst the role of the regional bodies in engaging their local communities is vital, the Committee believes that education and capacity building of local communities won't achieve widespread change if there are negative economic drivers. The call from witnesses for more investment in R&D for commercially viable salinity solutions is supported by the Committee. Without further research in this area and correspondingly, the development of new industries, many current land management uses will continue to exacerbate the salinity problem.

8.97 The Committee believes that more needs to be done to attract industry to invest in salinity research and development, and to support the development of new, sustainable and profitable industries. While good progress is being made on improving the sustainability of existing industries, this activity may not be sufficient to achieve substantial changes needed in recharge rates. Similarly, undertaking revegetation using public funds will not be enough to slow down and reverse rising groundwater. To make significant reductions in recharge rates will also require new industries that can be rolled out at landscape scale. New land-use systems that make much more efficient use of rainfall and where profitability of new industries is the driver for land-use change are required. In short, developing new industries is vital.

8.98 This is a major long-term undertaking, which will require a combination of big R&D projects along with measures to provide incentives and certainty for serious private investment in developing infrastructure. New industry development will require a considerable commitment from Government and a review of existing policy mechanisms that support industry development. Three factors will need to be addressed: the policy mechanisms available to encourage development of new industries, existing mechanisms that may unfairly advantage industry competitors; and the carefully targeted funding of key parts of the R&D process.

The recommendation below should be implemented in conjunction with recommendation 23.

Recommendation 15

8.99 The Committee recommends that the Australian Government review existing policy mechanisms (tax incentives, MBIs etc) in order to provide a policy environment that encourages and supports the development of new, large-scale sustainable industries that meet NRM priorities.

Mapping

8.100 The Committee was encouraged to hear that advances in mapping technologies enable a more targeted and detailed mapping of salinity. The recently published guide and book, *Salinity Mapping Methods in the Australian Context*, provide a valuable resource for mapping dryland salinity in Australia.

8.101 The Committee would like to see updated assessments of the salinity risk across the states and territories expedited, followed by more detailed mapping of high-

risk areas. Particular attention should be directed to urban areas at risk of salinity and rural lands being considered for urban development.

Recommendation 16

8.102 The Committee recommends that updated assessments of salinity risks be undertaken across the states/territories, followed by detailed mapping of high risk areas with particular attention paid to urban environments. It is recommended that priority areas under the NAP be re-assessed in light of the updated assessments.

Recommendation 17

8.103 The Committee recommends that mapping is conducted in areas in which salinity is known to be a potential hazard before further urban development is approved in those areas.

Urban salinity – meeting the challenge

8.104 As discussed in Chapter 6, urban salinity is of particular concern to the Committee. Evidence to this inquiry echoed concerns raised in the House of Representatives Report that insufficient attention is being directed to this problem. A range of infrastructure can be affected by salinity - roads, bridges, buildings, footpaths, pipes, sewerage systems, railway lines and power lines. Some submitters predicted that that the financial impact on infrastructure could exceed impacts on agriculture.

8.105 The Committee believes that greater national leadership on urban salinity is required. Along with this, more attention needs to be paid to urban salinity in the regional investment planning process.

8.106 The role of local government in urban salinity management is critical. Local government is responsible for a range of civic infrastructure at risk of salinity. The Committee heard that local government is often under-resourced to deal with urban salinity and, in some cases, lacking in information and knowledge. Access to information and education was dealt with in recommendation 4.

8.107 Recommendations 18 and 19 should be implemented in conjunction with recommendations 4 and 5.

Recommendation 18

8.108 The Committee recommends that the Australian Government give greater emphasis to urban salinity at a national level by:

- **building links between the administering departments and relevant agencies such as the Department of Transport and Regional Services and the Australian Transport Council**
- **supporting research into the development of technologies for managing urban salinity**

- **allocating funding to urban salinity in the next salinity program**

Recommendation 19

8.109 The Committee recommends that the Australian Government in cooperation with the state/territory governments use the accreditation process to ensure that urban salinity is adequately accommodated in regional investment strategies.

Recommendation 20

8.110 The Committee recommends that the Australian Government establish a pool of special grants to be made available for local governments to address urban salinity issues. Access to grants will be contingent on a demonstrated willingness to align planning policies and decisions with sustainable natural resource management principles.

Recommendation 21

8.111 The Committee recommends that a suitable body such as the Productivity Commission or the Australian Bureau of Agricultural and Resource Economics (ABARE) undertakes a study into the future impacts and costs of salinity on infrastructure in urban and rural environments, and develop a long-term strategy that includes consideration of federal, state and local government funding levels.

Streamlining regional investments

8.112 The Committee heard that a more rigorous and systematic approach to investment is required. As discussed in Chapter 7, evidence was received on the development of the Salinity Investment Framework 3 (SIF3), which is a decision-making framework for the selection of appropriate salinity investment options. SIF3 provides a framework for undertaking risk and cost/benefit analyses coupled with assessment of the various regulatory and policy mechanisms available to manage salinity. The framework can be applied at the national, state and local levels.

8.113 The Committee believes that a national investment framework would provide a sound process for making informed, objective and transparent investment decisions. The benefits of such a framework are that it would:

- achieve consistency in decision-making
- enable an objective assessment of competing interests
- facilitate the effective targeting and allocation of limited resources

Recommendation 22

8.114 The Committee recommends that the Australian Government in cooperation with the states and territories keep a watching brief on the development of the Salinity Investment Framework 3 (SIF3), with a view to potentially implementing it (or a modified version of it) across the country. It is

recommended that the framework be applied within the context of the new (post-2008) program(s).

Securing private investment

> The absence of an institutional framework for leveraging large-scale private investment in commercially viable and environmentally beneficial ventures remains a gaping hole in the national NRM programmes.[23]

8.115 As discussed in Chapter 5, evidence showed a need for much greater research and development into viable and profitable salinity solutions. Without the development of new industries, current sustainable farming options will not be enough to meet the challenge of salinity in some areas. That is, they will not be sufficient to reduce the amount of recharge required to manage the salinity problem.

8.116 The importance of Government commitment to support the development of new industries was discussed above. Along with this, the Committee believes that substantial private investment will be critical in getting new ventures up and running. The recommendation below should be implemented in conjunction with recommendation 15.

Recommendation 23

8.117 The Committee recommends that the Australian Government develops a national policy package to leverage large-scale private sector investment in new, sustainable and profitable solutions.

Senator Andrew Bartlett
Chair

23 The Australian Conservation Foundation, *Submission 19*, p. 55.