Chapter 7

The triple-bottom line

> … Economics play a part; it's why that Dollar sign.
> And yes, it is the driver of that Triple Bottom Line.
> Farmers need the confidence that they can make it pay.
> They have to get their money back, there is no other way.
> We need a greener attitude to show the world we care,
> To leave this land in better shape when we're no longer there.
> We need to know what we do now won't cause some future pain.
> We hold this land in sacred trust - not for selfish gain.
> The Social side's important, too. More people need to stay.
> Should we just ignore this land –? Give up and walk away?
> With ev'ry salty farm that's sold to neighbours down the road,
> It's one more family that has gone – One less to share the load. …[1]

7.1 Balancing economic, environmental and social objectives and outcomes emerged as a key theme in evidence received. During the course of the inquiry it became evident that there are further and interrelated tensions inherent in the complex task of salinity management:

- balancing public and private interests and investment in salinity management
- what is best - preventing salinity, reversing salinity or adapting to salinity?
- balancing voluntary, persuasive and prescriptive regulatory/policy measures

7.2 Managing these tensions well will be critical to achieving the goals of the national programs.

7.3 In this chapter the Committee considers evidence on the above tensions, and major themes emerging from these tensions: the need for a mix of approaches to salinity management, the need for greater industry involvement and private investment in salinity management, and the role that a streamlined investment framework and the right mix of regulatory and policy instruments could play in achieving these goals.

Balancing economic, environmental and social objectives

7.4 As noted in Chapter 4, development of regional plans, which form the basis for salinity management and natural resource management more broadly, must take into account the social, the economic and the environmental. Whether a balance between the three is being effectively achieved was an issue raised during the inquiry.

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1 Mr Michael Lloyd, *Submission 40*, p. 6.

7.5 The Conservation Council of WA expressed concern that Australian Government Research is driven by economic factors at the expense of environmental ones:

> … it appears that the emphasis of the Australian Government research is driven by the '$ profit motive' rather than protection of the nations ecological wealth and natural capital, with a classic case in point being the axing of Australian Government funding from wildlife and ecology research but not from biotechnology research.[2]

7.6 The Committee was concerned to hear that there have been few studies on the impacts of salinity on biodiversity in the eastern states.[3] The most comprehensive work was undertaken in 2001. This national study was commissioned by the Standing Committee on Conservation for the Australian and New Zealand Environment Conservation Council (ANZECC). Information on this study provided to the Committee suggests there are gaps in the data collated. For example, figures provided for NSW are 'substantial underestimates' as they only cover forests on freehold land.[4]

7.7 On the other hand, the Committee heard evidence that attention was focused on biodiversity at the expense of productivity outcomes in WA. The WA Farmers Federation reported that: 'community concern is being expressed over a perceived focus on biodiversity outcomes as opposed to sustainable farming and salinity control outcomes'.[5]

7.8 As discussed in Chapter 4, concerns were raised about different interests not being heard in the regional decision-making process. The WA Farmers Federation suggested that an imbalance of stakeholder representation on regional committees led to an imbalance in areas targeted for investment, with productivity outcomes losing out:

> … in respect to the running of the councils, who is on them and who is making the decisions, certainly one of the perceptions or the realities is that there is a balance of people on those committees not necessarily balanced towards productivity outcomes.[6]

7.9 Evidence suggested that commercial drivers were integral to the successful management of salinity For example, Mr De Landgrafft from the WA Farmers Federation said:

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2 Conservation Council of WA, *Submission 11*, p. 6.

3 Department of the Environment and Heritage & Department of Agriculture, Fisheries and Forestry, answer to question on notice, 6 September 2005 (received 1 November 2005).

4 Department of the Environment and Heritage & Department of Agriculture, Fisheries and Forestry, answer to question on notice, 6 September 2005 (received 1 November 2005).

5 WA Farmers Federation, *Submission 41*, p. 3.

6 Mr McMillan, *Committee Hansard*, 18 November 2005, p. 55.

> The question of salinity is a complex one and there are a lot of people who have a few ideas about what the solution might be, but one thing is for sure, and that is that any real and lasting solution will have to be a commercial one. Whilst there will be people who will try this and try that and say there is limited success with it, if the farmers cannot make money out of the solution, they will continue to walk away from the problem. It has been better business to walk away from the problem and buy more farmland than to try to bring back country that has gone down.[7]

7.10 The Avon Catchment Council, WA, similarly acknowledged that 'economic driver identification' is a lever in encouraging land managers to address salinity.[8]

7.11 The CRC for Plant-Based Management of Dryland Salinity observed that the investment planning process needs to be able to balance the economic effects on farmers and the broader salinity impacts:

> To underpin investment planning, CMAs need access to the capacity to analyse the trade-off between on-farm economic impacts, and off-farm salinity impacts.[9]

7.12 This view was affirmed in research by Professor David Pannell, who further notes that farmers may be forced by economic circumstances to choose short-term gains over long-term gains. Salinity mitigation may take years to take effect. It can be hard for farmers to voluntarily change their land management practices when short-term demands prevail: 'those farmers who are forced by circumstances to give priority to short-term profits are unable to adopt preventative measures even if they would eventually be profitable enough to offset the up-front costs and interest'.[10]

7.13 In SA, Mr Wickes from the Department of Water, Land and Biodiversity Conservation told the Committee that their programs seek to achieve a balance between 'primary production and the biodiversity of the region':

> We listen to all those communities to try to make the matter balance. Our aim is to improve the biodiversity as well as protecting the agricultural land that is available. It has to be seen in a total catchment context; it cannot be seen as one versus the other.[11]

7.14 Dr David Masters, CRC for Plant-Based Management of Dryland Salinity made the point that farming activity and environmental improvement are not necessarily mutually exclusive. He also argued that revegetation is not necessarily a cost but may also be viewed as an investment:

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7 Mr Trevor De Landgrafft, *Committee Hansard*, 18 November 2005, p. 54.

8 Avon Catchment Council, *Submission 42*, p. 2.

9 CRC for Plant-Based Management of Dryland Salinity, *Submission 18*, p. 2.

10 D. Pannell, 'Voluntary versus Regulatory Approaches to Protecting the Environment in Rural Areas', *Farm Policy Journal*, vol. 2, no. 3, August Quarter 2005, p. 2.

11 Mr Roger Wickes, *Committee Hansard*, 16 November 2005, p. 7.

> I would like to take the opportunity to get a couple of points across that are the basis for my involvement in salinity management. The first is that farming is frequently seen as being in conflict with environmental improvement, particularly with salinity. This is not necessarily the case. The second is that similarly revegetation of saline areas and introduction of plants that reduce the risk of salinity have been viewed as a cost and not as an investment, at least from a farm business perspective. This is also not necessarily true.[12]

7.15 The Committee also heard that economic considerations are invariably bound up with social impacts. For example, discussions in WA suggested that farmers with diminishing tracts of workable land were selling up their properties. In turn, neighbouring farmers were buying this land to supplement their own diminishing supply of profitable land – a more cost effective and immediate option than attempting to remedy saline-affected areas. This results in larger farms with smaller communities, which has flow-on social and economic effects - for example, social isolation and a decline of rural towns and businesses in response to a smaller demand for services.

7.16 Mr Dunne, a WA landholder, told the Committee that: 'Our population is diminishing so quickly it is going to be all over soon for some of the small communities'.[13]

7.17 Mr Tallentire, Director of the Conservation Council of WA also highlighted the impact of salinity on rural communities:

> An area that I do want to quickly touch on is the social cost. We all know that in the rural regions of Western Australia, and I guess across the country, we have a significant decline in rural populations, decline in amenity values in rural areas, and we also see things such as the 'desperately seeking Sheila' phenomenon—the female famine—where people do not want to live in a desolate landscape. That is as a result of a number of declining environmental factors, and salinity is certainly amongst those.
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> When you combine the rural gender imbalance with severe financial stress that many in the rural sector are facing, and a degraded environment, you have a cocktail for poor mental health, family breakdown and sometimes—most tragic of all—suicide. We all know that Australia has a particularly high youth suicide rate, perhaps one of the worst in the world, and it is in the rural areas that we see that manifesting itself at the worst levels. So there is no doubt that there is a linkage between the environmental, social and economic factors in the regions that are touched by salinity. We cannot underestimate the role that salinity plays.[14]

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12 Dr David Masters, *Committee Hansard*, 18 November 2004, p. 16.

13 Mr John Dunne, *Committee Hansard* , 18 November 2005, p. 70.

14 Mr Christopher Tallentire, *Committee Hansard*, 18 November 2005, pp 60-61.

7.18 Professor Copeland, University of Sydney, told the Committee that addressing salinity requires taking account of social and political sensitivities as well as developing science solutions:

> The benefits are not only in solving the salinity problem per se. There are social and community and political sensitivities that need to be taken into consideration. I do not know what sort of group holds the expertise to do that. Scientists are part of it, but to develop a scientific model is going to be very much a small part of what needs to be done.[15]

A silver-bullet solution?

7.19 Several witnesses highlighted that there is no 'silver bullet' solution to salinity and seeking one is flawed. Dr Munday's comments typified this view. Reflecting on the decision to complete deep drainage in the Upper South-East region in SA and the deep divisions in the community resulting from this (discussed in the case study below), Dr Munday said:

> I think that it highlights the peril of looking for one silver bullet to solve this. I am not suggesting that the drain was the silver bullet but to some extent it was in the upper south-east. That was where everyone pinned their hopes: the drain would get rid of the floodwater and halt the rising ground water. That was the big ticket item and that is what people got really interested in. But we have known for a long time that it is never as simple as that.[16]

7.20 The most appropriate solution(s) will vary from region to region, depending on a range of conditions such as soil types, terrain and climate and the range of assets that are under threat, for example, biodiversity, agricultural land and infrastructure.

7.21 Mr Leak from the SA Department of Water, Land and Biodiversity Conservation noted that finding solutions that can produce a range of outcomes and satisfy all parties is never easy:

> It is a difficult balance to find solutions on the ground that provide biodiversity and environmental outcomes and primary production outcomes as well. …we do bring everybody to the table as part of the decision-making process to try to understand what all the issues are. The role that we have is to try to bring those into an integrated solution that meets the issues that are identified for each individual catchment.[17]

7.22 As discussed in Chapter 2, there may be a geographical dislocation between the cause of salinity and where it takes effect. Further, implementation of solutions in one area may lead to (positive or negative) impacts in another area. For example,

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15 Professor Les Copeland, *Committee Hansard*, 14 October 2005, p. 37.

16 Dr Bruce Munday, *Committee Hansard*, 16 November 2005, p. 55.

17 Mr Michael Leak, *Committee Hansard*, 16 November 2005, p. 7.

drainage can have downstream effects. Mr Wickes' comments on the SA Upper South East Dryland Salinity Program highlighted this issue:

> People in various parts of the catchment have different views and people want different outcomes and they can have different impacts on each other. Having worked in the south-east in the other part of the drainage system, I know there are quite a number of different views and outcomes that people have and want. It does not matter where you go; you are going to get that. The particular issue we have at the moment is that we are in two catchments that have salinity at the top end and some biodiversity and other outcomes at the bottom end that we need to protect. How you put all that together to come up with some satisfactory solution is where we are at. That is why there is a lot of discussion at the moment about those programs.[18]

7.23 Salinity management can involve trade-offs. Part of managing the salinity problem involves assessing and accepting certain trade-offs. Reflecting on the Murray-Darling Basin, Mr Kendall told the Committee that:

> The other issue with the Murray-Darling Basin is that salinity is very much about trade-offs. Managing salinity in the upper states—Victoria and New South Wales—may involve, for example, putting drains in irrigation areas. The drains in irrigation areas will improve local salinity and are an essential part of managing salinity, but the trade-off is that that drainage puts more salt into the river. That can increase river salinity levels and, obviously, for the downstream jurisdiction—South Australia—that is a major issue. Adelaide, with over one million people, relies on the Murray for a large proportion of its water. The role of the Murray-Darling Basin Commission is to bring the governments together, look at those trade-offs and manage salinity within limits.[19]

7.24 In SA the Committee heard about the trade-offs and tensions involved in managing salinity. The following case study illustrates the complexity of dealing with a range of stakeholders with different expectations of salinity management.

Case study - Upper South-East (USE) Dryland Salinity and Flood Management Program

Background

7.25 The Upper South East Dryland Salinity and Flood Management Program (USE Program) in South Australia was launched in the early 1990s to address the growing problem of salinity in the region. Key objectives of the program are to control surface water flows to alleviate the effects of flooding and to lower the watertable that brings salt to the surface.

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18 Mr Roger Wickes, Department of Water, land and Biodiversity Conservation, *Committee Hansard*, 16 November 2005, p. 9.

19 Mr Matthew Kendall, Murray-Darling Basin Commission, *Committee Hansard*, 6 September 2005, p. 39.

7.26 The program consists of three sub-programs:

- construction of a network of deep drains across the region to channel away water both on the surface and in the watertable;
- delivery of initiatives to protect biodiversity, restore watercourses and maximise the productive potential of the region; and
- provision of business services (planning, administration and strategic communications) to ensure the effective delivery of the program.

7.27 The USE Program is supported by specially enacted legislation, the *Upper South East Dryland Salinity and Flood Management Act 2002.* The Act was created to ensure the efficient implementation of the drainage network across the region. It grants powers to the South Australian Government to compulsorily acquire land without payment and levy landholders for the costs of constructing the drainage network. Immediate costs to landholders are considered to be offset by the environmental and productivity benefits that can be expected by reducing salinity.[20]

7.28 The Australian and SA Governments are contributing $19.15 million each under the National Action Plan for Salinity and Water Quality to the implementation of the Upper South East Program. This builds on earlier joint Government investment of $18 million.[21]

7.29 The Act is due to expire on 12 December 2006 which places imperatives on USE Program administrators to deliver project milestones on schedule.[22]

7.30 The USE Program has achieved the construction of 495 kilometres of drainage, with 165 kilometres still to be installed. A total of 1,250 hectares of land have been revegetated, 6,500 hectares of remnant vegetation fenced, and more than 2,600 hectares of wetland protected.[23]

Examining the USE Program

7.31 There is widespread community acceptance of many initiatives within the USE Program, such as revegetating the land to reduce groundwater recharge and taking action to conserve the wetlands and biodiversity. The community is divided, however,

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20 The Hon John Hill, Minister Hansard (2002), *Record of debate on 2nd reading of the Upper South East Dryland Salinity and Flood Management Amendment Bill.* House of Assembly, 5 December 2002.

21 Department of Agriculture, Fisheries and Forestry & Department of the Environment and Heritage, *Submission 24*, p. 9.

22 The Environment, Resources and Development Committee, Parliament of South Australia, *Upper South East Dryland Salinity and Flood Management Act 2002 – Report July 2003-June 2004,* 28 November 2003, p. 3.

23 Mr Roger Wickes, Executive Director, Natural Resources Management, *Committee Hansard,* 16 November 2005, p. 4.

on the issue of constructing the remainder of the deep drain network. Principal areas of concern brought to the Committee's attention are the economic viability of the drainage network as a primary treatment for salinity in the region and the longer term impact on the environment of the drainage system.

Photograph courtesy of Mr Frank and Mrs Carole Burden: the 'Grand Canyon' – deep drain, SA

7.32 Local landholder, Mr Burden, stated in his submission that less intrusive and more economical options were not adequately explored before agreeing to the drainage system.[24] He argued that the USE Program administrators made the assumption that the only method of reducing the impact of salinity was through the network of drains.[25] Similarly, Mr Hayward submitted that the 'option to not dig a drain' was not given sufficient consideration.[26]

7.33 It was asserted that less intrusive and more economical options are available, such as planting of deep-rooted perennial vegetation pastures to manage recharge and installing shallow surface drains to relieve flooding:

> We do not require or want a deep drain, as we manage the existing watercourse via a wide shallow surface water drain [150 mm] which does

24 Mr Frank Burden, *Submission 38,* pp 1, 2, 6.

25 Mr Frank Burden, *Submission 38,* p. 3.

26 Mr Bill Hayward, *Submission 34*, p. 2.

> not draw down the water table, but does effectively move the surface water down stream to the wetlands northwest of my property.[27]

7.34 A number of submissions questioned whether the financial benefits of the drains outweighed costs of construction and long term maintenance. A landholder cited his property as an example where salinity has been present for '18,000 years and yet has been highly productive under salt-tolerant pastures'.[28]

7.35 Concern was raised about the impact of the drainage system on the natural environment and biodiversity.[29] Mr Burden stated that the advantages of deep drains are 'grossly exaggerated' and are restricted to the sides surrounding the drain.[30] He reported that evidence of the degradation of sub-soil structure around the drains has already occurred and is predicted to increase.[31]

Photograph courtesy of Mr Frank and Mrs Carole Burden: Parrakie Wetlands, SA

7.36 Another submission referred to a report from the CSIRO, claiming that there is a 'lack of scientific information on the effects of drainage on native vegetation, on the fresher perched groundwater lens, and on salt loads in the catchment'. [32] This may

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27 Mr Patrick Ross & Ms Pip Rasenberg, *Submission 35,* p. 2.

28 Mr Frank Burden, *Submission 38,* p. 3.

29 Mr Frank Burden, *Submission 38,* p. 3; Ms Josie Jackson, *Submission 32,* p. 1.; Vogelsang & Partners, *Submission 31,* p. 2; Mr Rod Johnson, *Submission 28,* p. 1.

30 Mr Frank Burden, *Submission 38,* p. 1.

31 Mr Frank Burden, *Submission 38,* p. 5.

32 Mrs Susan Prosser, *Submission 33,* p. 1.

result in damage to the environment in the longer term, as well as the additional costs to the community to manage such problems.

7.37 From a different perspective, the Coalition of Concerned Landholders' (a group of 20 landholders) submission supports the construction of the remaining deep drains. The Coalition stated that deep drains have proven to be effective in lowering the water table to the pre-salinity state, increasing the agricultural productivity of the land and generating revenue for the community.[33]

7.38 Mr McCarthy, a technical consultant to the Coalition, informed the Committee that shallow drains are not considered a viable alternative, referring to instances where they had been constructed and yet were not successful in returning saline land to production.[34] The Coalition's submission also made the claim that shallow drains are ineffective during years of high rainfall and have limited use in years of average rainfall because very little water is diverted to wetlands.[35]

7.39 The Coalition does not support the view that planting native vegetation will reduce the water table, and consequently, salinity levels. They argued that this will not be successful because the levels of salt and other chemicals in the soil are too high and growth of some pasture plants is inhibited in waterlogged soil.[36]

7.40 The Coalition stated that areas once badly affected by salinity have been regenerated since the installation of deep drains, demonstrating the success of the drainage network.[37] Drains with a depth of 2.0 metres 'protect flats from dryland salinity and protect flats from groundwater mounding associated with increased flows and retention of surface water in the wetlands and watercourses'.[38]

Balancing competing priorities

7.41 Evidence suggests that the drainage network may be assisting to preserve traditional agricultural production, but potentially inflicting damage to the environment in ways not presently apparent, such as to wetlands, soil structure around the drains and biodiversity in areas receiving water extracted from the land. Further, it would seem that some landholders are benefiting from deep drains while others are not. However, Mr Roger Wickes from the Department for Water, Land and

33 Coalition of Concerned Landholders, *Submission 43*, p. 11.

34 Mr Donald McCarthy, Technical Consultant, Coalition of Concerned Landholders, *Committee Hansard,* 16 November 2005, pp 37-38.

35 Coalition of Concerned Landholders, *Submission 43,* p. 21.

36 Coalition of Concerned Landholders, *Submission 43,* p. 14.

37 Coalition of Concerned Landholders, *Submission 43,* pp 16-18, 22-23.

38 Coalition of Concerned Landholders, *Submission 43,* p. 12.

Biodiversity Conservation told the Committee the program aims to balance production and environmental outcomes.[39]

7.42 Several submissions (with one submission expressing the views of six landholders) expressed dissatisfaction that the views of the community are not being adequately considered in relation to the future of the USE Program.[40]

7.43 The administering Department put forward a different view. Mr Leak told the Committee: 'we do bring everybody to the table as part of the decision-making process to try to understand what all the issues are'.[41] This was affirmed by Mr Calvert from the Australian Government Department of Agriculture, Fisheries and Forestry:

> From my contact with that program … overall it has an extensive communications component. Where a recommendation is sought from the board, the actual extent of landholder consultation is always a critical underpinning of any advice going to the board.[42]

7.44 It is outside the terms of reference for the Committee to further investigate and assess the merits of the 'for' and 'against' cases.[43] However, the USE Program clearly illustrates some difficult tensions in managing salinity:

- the difficulty of balancing environmental, social and economic objectives
- the difficulty of balancing competing interests
- solutions to salinity may involve trade-offs – it remains unclear whether the perceived trade-offs or costs (environmental damage and high economic costs) in installing deep drains in the USE region are outweighed by the benefits

Achieving Multiple Outcomes

7.45 Some evidence focused on the desirability of achieving multiple outcomes through NRM activities. Greening Australia argued:

> Projects in the environmental arena that focus on a single objective are fraught. It would be far more desirable to require projects to deliver across a range of benefits, especially as these can be readily achievable. In this context, efforts to mitigate salinity can also have benefits on water quality,

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39 Mr Roger Wickes, Executive Director, Natural Resources Management, *Committee Hansard,* 16 November 2005, p. 7.

40 Mr Patrick Ross & Ms Pip Rasenberg, *Submission 35,* Attachment 1, p. 3; Mrs Susan Prosser et al, *Submission 33,* p. 3; Mr Bill Hayward, *Submission 34*, p. 2; Mr Frank Burden, *Submission 38a*, p. 14.

41 Mr Michael Leak, *Committee Hansard*, 16 November 2005, p. 7.

42 Mr David Calvert, *Committee Hansard*, 28 February 2006, p. 45.

43 The Committee also notes that the SA Parliament's Environment, Resources and Development Committee is currently investigating complaints about the USE Program.

> biodiversity and even reducing greenhouse gases by establishing carbon sinks. If these multiple benefits are actively sought, the return on investment will be significantly enhanced. Designing for multiple outcomes can be complex and requires an open-minded, inclusive process. It needs to be carried out at the regional scale rather than at the scale of individual patch or property. The desire to achieve multiple benefits, and hence greater value for money, should be a fundamental principle of the NAP.[44]

7.46 Mr Robert Vincin submitted that protection of natural assets – water, soil, vegetation and atmosphere – cannot be considered in isolation:

> [W]ater soil vegetation atmosphere are the core assets of the nation and planet. These assets are interlinked, insolubly linked, you cannot interfere with one without interfering the others. Salinity, drought, flood, devegetation, lack of water, climate change, can only be addressed collectively.[45]

7.47 In a similar vein, the Conservation Council of WA stated:

> It still appears that many projects and programmes are still 'single outcome' focussed rather than looking at 'multiple outcomes'. For example, many salinity remediation based projects are not incorporating aspects such as carbon sequestration for climate change mitigation, biodiversity conservation, or 'triple bottom line (ie the ecological and social components), etc. The main issue of concern still appears to be focussed on profit driven productivity issues, with an economic rationalist's ethic, rather than a holistic approach to achieving landscape change.[46]

7.48 The Conservation Council noted two exceptions to this 'single-outcome focus': the Greening Australia Western Australia's Farm Forestry Program, and the Integrated Wood Processing Plant at Narrogin, which is looking at carbon sequestration and salinity mitigation.[47]

7.49 Professor David Pannell argues, however, that seeking multiple outcomes is, in some cases, 'counterproductive'. Against the view that 'each dollar does more than one job', Professor Pannell suggests that investment should be based on the degree of risk to an asset and the value of that asset so that limited dollars can be targeted accordingly:

> A focus on generating multiple benefits may lead investors away from protecting some very valuable assets that are only facing a single threat. Even if there is only a single threat to an asset, it may be that the severity of that threat is very high – potentially higher than a combination of threats to another comparable asset. …If there are several threats requiring attention,

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44 Greening Australia, *Submission 16*, p. 3.

45 Mr Robert Vincin, *Submission 10*, p. 1.

46 Conservation Council of WA, *Submission 11*, p. 3.

47 Conservation Council of WA, *Submission 11*, p. 3.

> it is highly likely that the asset in question will be especially expensive to protect. Given that budgets are limited, this greater expense tends to reduce the attractiveness of a strategy that would effectively protect that asset at the expense of several other more cheaply protected assets.[48]

7.50 In particular, Professor Pannell notes that the intervention required to manage dryland salinity is great and requires a highly focused and resource intensive effort.[49]

7.51 In short, while in some circumstances aiming for multiple outcomes is advantageous, doing more than one job is not necessarily the most efficient use of each dollar.

7.52 Making a different but related point, the Northern Agricultural Catchments Council submitted that achieving NRM outcomes through one program was improbable. Reflecting on the NAP the Council stated:

> We consider that any expectation of delivery of improved resources through a single program to be unrealistic. The program has however served to highlight the importance of its goals, to increase community involvement in delivery of improved natural resource management, and to begin the challenging task of integrating whole of community (including agency) action towards achievement of these goals. These goals underpin on-ground change and would not have been achieved without the program.[50]

Public good versus private good

7.53 Mr Bradley, CEO of the Northern Agricultural Catchments Council, told the Committee that the WA Salinity Investment Framework guidelines emphasise public funds being used for public good. He explained that:

> Any private benefit needs to be measured against private input as well as the public benefit that comes from that investment. We are having our investment couched by those guidelines, and it may appear that the output is biodiversity protection as opposed to sustainable farming practices.[51]

7.54 The Wheatbelt Catchment Alliance, a group of community advocates for deep drainage, similarly pointed out that WA's Salinity Investment Framework targets public benefit rather than private gain. They argued that, following this, the framework places a focus on biodiversity rather than 'national economic strength'.[52] The Alliance was critical of this distinction inferring that public benefit and private

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48 D. Pannell, *Seeking Multiple Outcomes in Environmental Programs*, p. 1, from http://cyllene.uwa.edu.au/~dpannell/pd/pd0068.htm (accessed 31 January 2006).

49 D. Pannell, *Seeking Multiple Outcomes in Environmental Programs*, p. 1, from http://cyllene.uwa.edu.au/~dpannell/pd/pd0068.htm (accessed 31 January 2006).

50 Northern Agricultural Catchment Council, *Submission 6*, p. 1.

51 Mr Alan Bradley, *Committee Hansard*, 18 November 2005, p. 41.

52 Wheatbelt Catchment Alliance, *Submission 44*, p. 7.

gain are not necessarily mutually exclusive categories. Investment that may enhance private gain might, in turn, enhance 'national economic strength', which could be viewed as being to the public benefit.

7.55 This view was reiterated by the WA Farmers Federation who submitted:

> There is also a need for Government to communicate a clear vision that it is prepared to support saving the long-term economic benefits of agricultural production and its multiplier effect on employment and wealth creation. This objective tends to be lost in debates of "public good v private good". It also tends to be secondary to saving biodiversity and rural infrastructure when the interdependence and well being of them all should be obvious.[53]

7.56 The Committee supports the WA Salinity Investment Framework's emphasis on public funds being used for public goods. The Committee also supports the investment of public funds for biodiversity outcomes *and* agricultural productivity outcomes. However, public investment on private land can only be justified if there is demonstrable public benefit. Whilst public benefit and private gain are not, as noted above, necessarily mutually exclusive, there must be real public returns on any public investment made. In other words, attention must be paid to the balance of money invested in private land and the amount or degree of public good achieved.

Accountability for public funds

7.57 The Conservation Council of WA argued that there needs to be greater accountability by landholders for public funds received for salinity management:

> There has been far too much public funds wasted on ineffectual programmes, and landholders need to have a greater sense of mutual obligation (as per legally binding mutual obligation schemes such as Work for-the-Dole) when they accept public funds for salinity mitigation and rehabilitation. For example, if a landholder is found to be clearing native vegetation whilst in receipt of public funds then the landholder should have to repay those public funds. Private landholders should be held accountable for receipt of tax payer funded schemes in the same manner as disadvantaged or marginalised sectors of society such as the unemployed.[54]

7.58 At a public hearing in Perth, Mr Tallentire, CEO of the Conservation Council, expanded on the above concerns:

> What we have found disappointing is when it has been suggested that, in return for receiving large amounts of public money for some Landcare works, some land-holders —and particularly, again, their peak bodies— have declined to want to protect that revegetation work with conservation covenants or some sort of guarantee that in years to come there would not

53 WA Farmers Federation, *Submission 41*, p. 3.

54 Conservation Council of Western Australia, *Submission 11*, p. 3.

> be a subsequent application for a land clearing permit. That has been quite disappointing and that is what we mean by the idea of mutual obligation.[55]

7.59 Mr Tallentire told the Committee this issue has been widely publicly reported in the past few years. His colleague, Ms Anna-Marie Penna, confirmed these concerns based on anecdotal evidence:

> When I was working as a conservation covenanting officer, I did hear a number of different reports of people saying, 'So-and-so conducted reveg here but when the new landowner bought it they cleared it so that they could put in vineyards,' or something like that. I do not have any hard-core information but I have certainly heard a lot of anecdotal stories. When I was working in the conservation covenanting program, one thing we did do was to encourage land-holders to incorporate part of their reveg as part of the conservation covenant, particularly where it formed linkages between the remnant vegetation that was being covenanted to protect the corridors et cetera. Another aspect to that mutual obligation is that land-holders should not be in receipt of public moneys for revegetation or drainage mitigation or whatever if they are also found to be clearing native vegetation, which we know is a primary cause of salinity. It is double dipping. It is immoral, in a way.[56]

7.60 Ms Penna told the Committee there appeared to be little follow up on the actions of those allocated public funds, and no penalties imposed for landholders known to be in receipt of public funds who were also engaged in land-clearing.[57]

7.61 As noted in Chapter 3, the Committee was concerned to hear that there are insufficient controls in place (or the will to enforce those controls) to adequately regulate land-clearing. While the Committee appreciates that many landholders are genuinely committed to sustainable land management practices, more rigorous accountability requirements and more effective regulation would bring inappropriate land management practices under control.

Preventing salinity, reversing salinity or adapting to salinity?

7.62 Salinity management can take three forms: actions to prevent further salinity, actions to reverse or reduce existing saline areas, and actions to adapt land management practices to a saline environment.

7.63 The Committee heard evidence on the need to, in some circumstances, adapt to saline land conditions. At the same time, evidence was received arguing that salinity should be reversed to restore the land and enable the continuation of existing farm practices.

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55 Mr Christopher Tallentire, *Committee Hansard*, 18 November 2005, p. 66.

56 Ms Anna-Marie Penna, *Committee Hansard*, 18 November 2005, p. 67.

57 Ms Anna-Marie Penna, *Committee Hansard*, 18 November 2005, p. 67.

Adapting to salinity - saline land as an asset

7.64 In WA Mr Michael Lloyd and Ms Sally Phelan from the Saltland Pastures Association,[58] emphasised the need to view saline land as an asset and not necessarily a 'curse'. In their submission they argued that it will not be possible to prevent or control all salinity and, therefore, the concept of adapting to salinity must be encouraged.[59] Acknowledging that different areas will require different responses, they pointed out that in some circumstance working with saline land is the best approach. Ms Phelan told the Committee:

> [T]he Saltland Pastures Association perspective is that we need to adapt to saline land in order for agriculture to remain profitable and in order to keep communities intact.[60]

7.65 The main objective of the Saltland Pastures Association is to facilitate the revegetation of one million hectares of salt-affected land in WA over a 10-year period with saltland pastures. This will be achieved by encouraging and assisting farmers to adopt saltland pastures through the provision of on-ground planning and support. The possibility of an incentive payment scheme is also being discussed with regional NRM groups.[61]

7.66 Mr Lloyd highlighted the importance of the triple-bottom line. He outlined the economic, environmental and social benefits of working with saltbush:

> The big benefit from saltland pastures economically is the ability to be able to provide out-of-season feed, with the green feed in the autumn, which is very much lacking in Western Australia. The high protein in the saltbush itself is balanced by the high levels of energy and carbohydrate in the understorey that we saw yesterday. Another factor that has only come out recently is the high levels of vitamin E in the saltbush leaf, which means that sheep, which traditionally in Western Australia have a deficiency in vitamin E in the autumn, when they are grazed on saltbush can overcome that deficiency and are much healthier.
>
> On the environmental side, we see the lowering of watertables and the reduction of salt at the surface as being a very important factor, not just for the farm itself to be able to grow better salt-sensitive annual plants but the export of salt from the farm into the waterways is reduced considerably. There is less erosion—both wind and water—on saltland pastures, and we

58 The Saltland Pastures Association is a WA farmer-initiated and driven group, which was established in 1997 to promote the use and benefits of saltland pastures in the wheatbelt of WA. The Association has secured funds through the NLP for a project manager.

59 Saltland Pastures Association, *Submission 40*, p. 1.

60 Ms Sally Phelan, *Committee Hansard*, 18 November 2005, pp 44-45.

61 Saltland Pastures Association, *Submission 40*, p. 3.

> have noticed this at home. … we are reducing the amount of waterlogging and increasing environmental benefits.[62]
>
> Regarding the triple bottom line, the other leg of it is the social side. As we develop more opportunities for farmers with salt land, more people can stay on the land. Farmers' sons and daughters will not have to leave the land to get a job: there will be plenty of opportunities for them on the farm with the increased productivity. We may even slow the drift from the farms to the cities with people having more of a social life and improving the social structure of the local communities.[63]

7.67 The Committee inspected a property where saltland pastures were being trialled during its tour of the Great Southern region in WA. Meeting with local farmers and scientists, the Committee heard about the benefits of saltland pastures and also the need for continued research into breeding of better adapted plants and more reliable methods for establishing saltland pastures.

7.68 The need for further research was highlighted by Mr McMillan, Director of Policy at the WA Farmers Federation:

> saltbush is fine and it is natural, but it does not really carry a lot of livestock. At the end of the day, we need the research and development and we need to use all of the technology available.[64]

7.69 Dr Masters from the CRC for Plant-Based Management of Dryland Salinity told the Committee about the work the CRC was undertaking:

> Importantly, I think that through that project we have been able to demonstrate that there are profitable options for revegetation of saline land to be used for grazing livestock but, also importantly, some of the returns from these are still a little bit marginal and there is a bit of a lack of confidence from primary producers in adopting some of these technologies because of the risks of failure, which is one of the things that is a key outcome of what we are addressing. The second thing that is coming out of there is that we have been able to demonstrate through some strategic revegetation that we can actually stabilise the watertable in some part of the landscape. This is really important because it means that we should be able to prevent the increase in salinisation. Both of those things have been done in a profitable, producer-driven business framework.
>
> There are some new complementary activities that are going on within the CRC that I think have the ability to transform saline land well past what we are looking at the minute. They involve things like: the generation of new salt-tolerant plants, which is already well down the track; the development of new animal management systems, understanding how animals behave in those sorts of grazing environments; and cheaper establishment costs,

62 Mr Michael Lloyd, *Committee Hansard*, 18 November 2005, p. 45.

63 Mr Michael Lloyd, *Committee Hansard*, 18 November 2005, p. 46.

64 Mr Andrew McMillan, *Committee Hansard*, 18 November 2005, p. 58.

> making it much cheaper and less risky for people to put plants in the ground. That is an example of the saline land activities we are involved in.[65]

7.70 The Central West CMA in NSW also argued that there is a need to adapt to some areas of saline land:

> Areas of catchments will remain saline, focus needs to be placed on using saline resources.[66]

7.71 The Committee's attention was drawn to a major program underway that focuses on saline land as an asset: Sustainable Grazing on Saline Land (SGSL). SGSL is a subprogram of 'Land, Water & Wool', which is a joint program of Australian Wool Innovation, Meat and Livestock Australia and Land and Water Australia. SGSL is being undertaken by the CRC for Plant-based Management of Dryland Salinity and involves testing and demonstrating land use systems for salt-affected landscapes.[67]

Controlling and reversing salinity

7.72 Mr John Dunne from the Wheatbelt Catchment Alliance presented an alternate view arguing that salinity can and should be controlled and reversed. The Wheatbelt Catchment Alliance is comprised of land managers in the Wheatbelt of WA. Members are pro-drainage advocates who have formed the Alliance in order to 'present a united front to funding and regulatory bodies at both State and Federal level'.[68] Mr Dunne told the Committee that salinity could be reversed through engineering solutions and asked for the opportunity to prove the best method:

> … basically the CRC for Plant-Based Management of Dryland Salinity is plant based management; it is an adaptation of our farming operations to salinity. It is not fixing it; it is putting up with it.
>
> We believe that salinity can be controlled, we believe it can be reversed and it can be done safely. We really need to set up a cooperative research centre for engineering solutions. I would not try to divert the attention of the CRC from plant based solutions and say, 'Well, look, we can easily tack that onto them.' Let us have them in competition. Let us have some engineering solutions. They might cooperate in terms of sites for trialling these alternatives, and then we can make some judgments on which is the best method.[69]

7.73 On Mr Dunne's invitation, the Committee visited agricultural land where an engineering solution (drainage) had been implemented, during its site inspection of

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65 Dr David Masters, *Committee Hansard*, 18 November 2005, p. 17.

66 Central West CMA, *Submission 9*, p. 2.

67 Department of Agriculture, Fisheries and Forestry & the Department of the Environment and Heritage, *Submission 24*, p. 19.

68 Wheatbelt Catchment Alliance, *Submission 44*, p. 3.

69 Mr John Dunne, *Committee Hansard*, 18 November 2005, p. 73.

WA's Great Southern Region. The Committee was able to witness the positive impacts that the drains were having on local land and vegetation and hear, first hand, about the impacts of salinity and its mitigation through drainage on farmers' lives and livelihood.

Photograph: Gents-Trayning deep drainage site, WA

7.74 The Committee appreciates that in some cases, engineering solutions - including deep drainage - may be the most appropriate solution. The Committee further supports more research into engineering solutions and their downstream impacts. However, the more common view presented to the Committee was that a multi-pronged approach to salinity management – adapting, preventing and reversing – was seen as the most economically viable and practical approach. Evidence pointed to the conclusion that there is not a 'silver bullet solution' or 'best method', rather a mix of plant-based and engineering solutions is required.

7.75 Further, engineering solutions are expensive to install and expensive to maintain. The Committee believes that all solutions or approaches to salinity management should be subjected to a robust cost-benefit analysis. As discussed

above, this should include consideration of the balance between public investment and private benefit.

Encouraging industry involvement

7.76 The issue of industry involvement in salinity management takes three forms:

- engaging existing industries in salinity mitigation advocacy and practice
- increasing private investment in salinity research and mitigation
- developing new landscape-scale industries

7.77 Encouraging private sector involvement in salinity management was a prominent theme in the House of Representatives Report. At the regional level, the need for regional bodies to engage with industry was highlighted in the following recommendation:

> … that the Australian Government encourage catchment management organisations to introduce industry development planning into their natural resource management planning and funding prioritisation process.[70]

7.78 As discussed in Chapter 4, some regional organisations highlighted the importance of industry involvement and the need for regional bodies to strengthen links with industry.

7.79 In the Government's response to the House of Representatives Report it was noted that the three national programs – the NAP, NHT and the NLP – and the primary industry research and development corporations are all designed to encourage industry/regional body collaboration. In particular, it was noted that the Sustainable Industry Initiative component of the NLP has led to partnerships with major resource-based industries. The partnerships link business and industry priorities with regional planning processes. [71]

Engaging existing industries in salinity mitigation advocacy and practice

7.80 Industry can be a major contributor to salinity. In their submission, the Hunter-Central Rivers CMA explained that 'land-disturbance industries' such as coal mining and power generation are a significant factor in the problem of salinity in the Hunter region and more needs to be done to understand and remedy the impacts of this:

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70 House of Representatives Standing Committee on Science and Innovation, *Science Overcoming Salinity: Coordinating and extending the science to address the national's salinity problem*, May 2004, p. *xxv*, recommendation 5.

71 The Australian Government Response to the House if 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. 6, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf (accessed 31 January 2006).

> The national economic worth of production from these land-disturbance industries is very significant, but there is little long-term federal investment in understanding the future impacts on the environment and Hunter rural industries.[72]

7.81 Ms Sharon Vernon from the Hunter-Central Rivers CMA noted that while the problem was significant, industry in the region had made a contribution to managing the salinity problem through the Hunter River Salinity Trading Scheme:

> Under the Hunter River Salinity Trading Scheme, which I think is unique in Australia, the catchment management authority runs an operation subcommittee which is set up under the New South Wales Protection of the Environment Operations Act. Under that scheme the salt level of the river is monitored by the Department of Natural Resources and on high flows mining and power generation industries are allowed to discharge their saline water into the river and they pay. They have credits to be able to do that. The operation of that scheme costs something like $0.5 million a year, which the industry is paying for. They can buy and use those credits. They have recently had the first auction. It was over $500 for one credit unit. I am not sure what the credit unit is, but it is a significant cost to them to run that scheme. They are doing their bit to try to reduce their impact on salinity levels in the river.[73]

7.82 Mr Tallentire from the Conservation Council of WA argued that agribusiness should be making a more substantial contribution to managing salinity:

> … funding for salinity has traditionally been seen as the preserve of government type programs—sell-offs of Telstra. We would like to present to you the need for greater involvement on the part of agribusiness. We often talk about having industry involvement, but there really is a very significant need for agribusiness—the section that makes the money out of the rural areas—to be contributing towards fixing the problem. … It is the agribusiness chain that creams off the profits that are made from the ecosystem that we are exploiting for our agricultural activity.[74]

7.83 The Committee notes that the Australian Government is currently piloting market-based instruments (discussed in more detail below) under its National Market-based Instruments Pilots Program, as a means of encouraging sustainable management of natural resources in Australia.[75] Some of the pilot projects underway deal specifically with industry contributions to the problem of salinity and its management. For example, the Green Offsets for Sustainable Regional Development pilot seeks to manage salt loads in the Murray-Darling Basin through offsets. Some industries in the

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72 Hunter-Central CMA, *Submission 2*, p. 2.

73 Ms Sharon Vernon, *Committee Hansard*, 14 October 2005, p. 51.

74 Mr Christopher Tallentire, *Committee Hansard*, 18 November 2005, p. 61.

75 Department of Agriculture, Fisheries and Forestry and Department of the Environment and Heritage, *Submission 24*, Attachment C.

region contribute substantially to the salt load in the catchment. These industries offset their emissions by investing in activities that reduce saline discharge from diffuse sources.[76]

Increasing private investment in salinity research and mitigation

7.84 Focusing on research and development, the House of Representatives Report recommended that the Australian government explore ways to facilitate private sector investment in research and development for commercial measures to manage salinity and other NRM issues.[77] A related recommendation advised that the Australian and state/territory governments work together to ensure that tendering processes enable industry to fairly compete with publicly funded bodies for public research funds.[78]

7.85 In their submission the Departments of Agriculture, Fisheries and Forestry, and Environment and Heritage explained that the Australian Government uses a range of incentive measures to encourage private sector investment in salinity and NRM research and development. These measures include levies, the R&D tax concession and the landcare operations tax concession.[79] In the Government's response to the House of Representatives Report, it was further noted that the Cooperative Research Centre model provides an important mechanism for linking researchers to industry.[80]

Developing new landscape-scale industries

7.86 As discussed in Chapter 5, one of the major research gaps identified by witnesses was the development of profitable landscape-scale solutions. The Committee heard that there is a need for profitable solutions that can be rolled out over a large enough area to make an impact. In conjunction with this is the need for support of development of new landscape-scale industries.

7.87 The Government's response to the House of Representatives Report identified a range of commercial activities that also produce environmental benefits. It was noted that substantial funding has been injected into oil mallee projects under the

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76 Natural Heritage Trust, *Managing Our Natural Resources: Can Markets Help?*, nd., p. 8.

77 House of Representatives Standing Committee on Science and Innovation, *Science Overcoming Salinity: Coordinating and extending the science to address the national's salinity problem*, May 2004, p. *xxvii*, recommendation 11.

78 House of Representatives Standing Committee on Science and Innovation, *Science Overcoming Salinity: Coordinating and extending the science to address the national's salinity problem*, May 2004, p. *xxvii*, recommendation 12.

79 Department of Agriculture, Fisheries and Forestry and Department of the Environment and Heritage, *Submission 24*, p. 20.

80 The Australian Government Response to the House if 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. 12, www.aph.gov.au/house/committee/scin/salinity/govtresponse/govtresponse.pdf (accessed 31 January 2006).

NHT.[81] The oil mallee project in WA (the Integrated Wood Processing Demonstration Plant) was also raised by several witnesses as an innovative venture and is discussed below.

7.88 For these, or other, commercially and environmentally viable activities to be developed into sustainable industries will require substantial support and commitment from Government. In a report commissioned by the Australian Conservation Foundation and the Joint Venture Agroforestry Program, *Fuelling Landscape Repair*, which considers the role a bioenergy industry could play in curtailing land degradation and climate change, the need for government backing was highlighted. [82]

7.89 In an accompanying press release it was pointed out that government backing will include access to measures that other competing industries currently enjoy (or the removal of these measures) – notably, subsidies.[83]

An example of industry innovation - the Integrated Wood Processing (IWP) Demonstration Plant

7.90 Mr Andrew Campbell, Executive Director of Land and Water Australia, pointed to the Integrated Wood Processing (IWP) Demonstration Plant in WA as an exciting trial of an industry-involved approach to salinity management which, it is hoped, will also produce environmentally and economically attractive products:

> I would like to draw the committee's attention to the fact that that the integrated wood processing plant at Narrogin is about to commence its wet commissioning process, its trial process. That is one of the most significant developments in salinity management in Australia. Wheat belt landholders have planted more than 10,000 hectares of oil mallees to go into a plant which will produce bioenergy, high-quality natural essential oils and activated carbon. The plant will provide its own energy to run itself from the eucalyptus oil biomass. It is the first time in the world that these three processes have been brought together in the one plant and it is being trialled at the moment, funded by Western Power to date, which is terrific.[84]

7.91 Mr Campbell went on to tell the Committee:

> I think we all should be watching this experiment extremely closely from a broader public policy point of view, not just an energy point of view. Western Power is not a dryland salinity agency or a land management

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81 The Australian Government Response to the House if 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).

82 Australian Conservation Foundation, *Submission 19*, Attachment 1.

83 Australian Conservation Foundation, *Submission 19*, Attachment 2.

84 Mr Andrew Campbell, *Committee Hansard*, 6 September 2005, p. 26.

agency; it is an energy utility and it is interested in seeing how the plant goes from an energy point of view. That is perfectly rational but it will be a tragedy for the land-holders who have established 10,000 hectares of oil mallees and for broader salinity management options if that plant is not evaluated across the whole triple bottom line and not just its energy production. The next three or four months are going to be critical in that process, after 10 or 15 years work.[85]

Photograph: the Integrated Wood Processing Demonstration Plant, Narrogin, WA

7.92 The IWP Demonstration Plant project at Narrogin, WA, addresses two environmental concerns, farmland salinity and global warming. The plant is trialling the co-production of renewable energy, activated carbon and eucalyptus oil from locally planted mallees.

7.93 The deep roots of the salt-tolerant mallee trees soak up groundwater, thereby preventing the water table from rising and, in turn, controlling salinity. Mallees store food and energy in their underground roots or lignotubers. When above-ground branches are removed, the trees are able to re-grow because of this food storage system. This means the mallees can be repeatedly harvested (every second year) without the need to replant.

7.94 The IWP plant converts the mallee wood into charcoal, which is then triggered to convert it to activated carbon. The activated carbon is used in air and liquid purification. High quality eucalyptus oil is distilled from the leaves, with the depleted leaves used to produce fuel for the plant's boiler. The oil will be used in the

85 Mr Andrew Campbell, *Committee Hansard*, 6 September 2005, p. 27.

pharmaceutical market and, it is planned, as an environmentally-friendly industrial solvent. The heat from both the wood conversion and the oil extraction processes are used to generate electricity. The electricity produced is an alternative to fossil fuel and is carbon dioxide neutral.

7.95 The project is funded by the Australian Greenhouse Office, the Department of Industry Science and Resources, the Department of Transport and Regional Services and the NAP. In addition, the following organisations have contributed to the project: Western Power, Enecon Pty Ltd, the CSIRO, the WA Department of Conservation and Land Management (CALM), the Oil Mallee Company of Australia, the Oil Mallee Association, Murdoch University, Curtin University and the Rural Industries Research and Development Corporation.[86]

7.96 The aim of the project is to prove the viability of the technology, the harvest and delivery systems and the potential markets for the products. In summary, the desired outcomes of the project are:

- a stable cash crop for farmers
- control of salinity
- a profitable renewable energy source
- three products (oil, renewable energy and activated carbon) from one plant ensuring the commercial viability of the operation

7.97 The Committee was fortunate enough to visit the oil mallee power plant in Narrogin as part of its inspection of salinity problems and solutions in the Great Southern Region of WA. The Committee looks forward to hearing the outcomes of this important trial and encourages the Australian and state and territory governments to continue their support of such innovative projects.

Securing large-scale private investment

7.98 Whilst acknowledging that some projects under the NAP and the NHT2 have increased business contributions, the Australian Conservation Foundation submitted that a lot more needs to be done to encourage broad-scale private sector investment in NRM:

> Unlike other areas of public policy, such as health and education, precious little effort has been made mobilising and motivating the private sector to deliver environmental benefits. 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.

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86 The information in the above section is taken from the Western Power website, www.westernpower.com.au/about_us/environment/renewable_energy and the Department of the Environment and Heritage website, http://www.deh.gov.au/settlements/industry/corporate/eecp/case-studies/western-power.html

> Although some NAP/NHT2 projects have undoubtedly resulted in business investment in NRM-related activities, and a few regional communities have been successful in raising philanthropic funds for environmental works, these have been opportunistic rather than strategic, and generally small-scale.
>
> Furthermore, the vast bulk of private investment in rural Australia is aimed at more or less traditional agricultural and infrastructure developments. Arguably, most of these have at least as many, if not more, environmental costs as benefits, and substantially fail to address problems like dryland salinity, river system decline and biodiversity loss. Most public investments in agriculture give little more than lip-service to sustainability.[87]

7.99 Mr Kevin Goss, CEO of the CRC for Plant-Based Management of Dryland Salinity, told the Committee that he envisaged the future successful management of salinity as involving a mix of landholder, industry and public investment, on a 70%, 20%, 10 % breakdown respectively:

> My prediction is that in the successful program, about 70 per cent of the positive result will come because farmers have invested in that out of their farm businesses. About 20 per cent of that positive outcome will come because new industries have been attracted into the rural and regional areas of Australia, because they have opportunities and they have invested in things that contribute to salinity. You had a window on that yesterday, when you went to Narrogin and saw the oil mallee venture.
>
> What that says to me is that about 10 per cent of the outcome will come from public moneys. The inference is quite clear—that it is in the astute use of public moneys to get the 90 per cent result. That is clearly a policy challenge. We are quite happy to take that a little further, but perhaps I will just underline the point by saying that there is work on market base instruments. You will hear about that. There is work on payments for ecosystem services.[88]

7.100 Mr Goss went on to explain that in order to attract industry and landholder investment the best use of the 10% of public funds needs to be carefully thought through:

> I would like to make an additional point which goes back to my 70 per cent, 20 per cent, 10 per cent scenario. The question is, 'Where is the best use of the 10 per cent public fund component and where is the best use of the total investment?' It seems an obvious point for me to make: the public funds have to take care of those very high value assets that society holds dear, such as biodiversity, water quality and water supply catchments et cetera. It is a very important priority for public funds.
>
> On the other hand, there needs to be enough leverage from the public investment through research and development and astute approaches to

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

88 Mr Kevin Goss, *Committee Hansard*, 18 November 2005, p. 15.

> bring in private investment which is going to do so much more for farmland and for those things that are very much in a commercial interest. It is how you balance that that becomes quite important. From our perspective, we do not see it as a trade-off. We see that biodiversity is very important and it is in fact part of our CRC. Our focus is on doing no further damage to biodiversity, not inadvertently introducing some of these perennial plants that become weedy. So we have measures to deal with that. We know that we can predict with confidence in the future the biodiversity implications of what farmers do on their farm. That is our contribution. But by focusing, as Alex says, on the profitability part of the story, it is our reasonable assumption that what farmers will do on their farm out of self-interest will largely take care of the threat to farmland.

7.101 The Australian Conservation Foundation praised the Market-Based Instruments Pilots Program (discussed below), which is currently being run by the Australian Government to encourage changed land-use practices. However, the ACF argued that it could be taken further:

> The $10M Market-Based Instruments (MBI) Pilots Program established under the NAP is a good, albeit tentative first step towards understanding and developing the role of such policy tools in NRM.
>
> ACF applauds the NRMMC decision to trial a range of different MBIs, but believes that, at least along two particular lines of private sector engagement, there are good arguments to move beyond the trial stage to the next step.[89]

7.102 The ACF put forward a recommendation that a national policy framework be established to drive large-scale private investment in a range of sustainable and profitable NRM ventures:

> That CoAG establishes a national policy package to leverage large-scale private sector investment in new, more sustainable and profitable land-uses and farming systems, specifically by:
>
> The establishment of statutory investment companies as tax-preferred investment vehicles to raise access to private capital for accredited commercial-environmental ventures;
>
> An integrated package of taxation offsets and concessions tailored to make environmental investments more attractive, with the aim of revenue neutrality;
>
> Nationally agreed accreditation criteria of plans for commercial-environmental ventures to ensure consistency with national and regional NRM priorities;
>
> Seed funding to be made available for innovative commercial ventures that yield verifiable environmental benefits;

89 Australian Conservation Foundation, *Submission 19*, p. 55.

> An Environmental Enterprise Fund to administer these programmes and concessions.[90]

7.103 Mr Watts from the Australian Conservation Foundation re-emphasised the need for large-scale private investment in new commercial ventures at a public hearing in Canberra.[91]

7.104 In a report by the Allen Consulting Group, *Repairing the Country: Leveraging Private Investment – Summary Report*, it was noted that whilst there is a range of instruments in use to encourage land-use change, little attention has been given to accessing capital markets - 'the largest pool of investment funds available'.[92]

7.105 Further research into profitable solutions and, correspondingly, the development of new industries are required if the salinity problem is to be effectively managed. For this to be achieved, substantial private investment is needed to supplement limited public funds. The Committee supports a greater focus on achieving large-scale private sector investment.

Balancing voluntary and prescriptive regulatory/policy measures

7.106 How to best regulate salinity management, and natural resource management more broadly, was an issue that was brought to the Committee's attention. Concerns were raised about the regulatory will of local government to use planning powers to control land-clearing and to contribute to effective natural resource management more broadly, and of state government to enforce compliance with native vegetation legislation (discussed in Chapters 3 and 6).

7.107 As noted above, there is also a tension between balancing public and private interests. One of the challenges is ensuring that arrangements provide a sufficient, secure regulatory environment that encourages salinity and broader environmental management but does not increase financial uncertainty for, or place an unfair financial burden on, private landholders or unnecessarily inhibit local industries.

7.108 At the same time, the Committee has heard that greater industry involvement in salinity management and the capacity to attract large-scale private investment will be instrumental to successful salinity management - as will government support for the development of new industries. This will require having appropriate regulatory and policy mechanisms in place so that industry involvement is encouraged and new industries are not disadvantaged by competitors.

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90 The Australian Conservation Foundation, *Submission 19*, p. 57.

91 Mr Corey Watts, *Committee Hansard*, 28 February 2006, p. 29.

92 Australian Conservation Foundation, *Submission 19*, Attachment 3, p. 11.

7.109 In order to meet these challenges, it is a matter of getting the right balance between voluntary and prescriptive measures, and penalty and incentive-based mechanisms.

Getting the right mix of regulatory/policy measures

7.110 Professor Copeland from the Centre for Salinity Assessment and Management, University of Sydney, drew the Committee's attention to a paper by Professor Pannell, which deals with regulation within the context of environmental protection in rural areas.[93] The paper, *Voluntary versus Regulatory Approaches to Protecting the Environment in Rural Areas*, addresses the issue of regulation and voluntarism.[94] In summary, Professor Pannell argues that appropriate mechanisms for land management regulation should be carefully determined on the basis of 'scientific understanding' and 'socioeconomic considerations'. His arguments are set out in more detail below.

7.111 There are a number of factors inhibiting voluntary regulation within the context of land management:

- lack of profitable options – in some cases, actions to mitigate salinity are unprofitable
- long time scales – positive effects of changed practices might not be realised for many years and farmers may be compelled to prioritise short-term profits over long-term gain
- uncertainty – the value of proposed land management changes may be uncertain
- problems with trialling the options – in some cases, trials need to be conducted on a large-scale for observable results. Farmers may not be in a position to invest in large-scale trialling
- off-farm impacts – the source of salinity may not be where the impacts are felt. Therefore there is no incentive for the farmer at the source to take action and a reduced incentive for the farmer affected to take action, who may feel the burden should rest with someone else.[95]

Types of regulatory/policy instruments

7.112 There is a range of regulatory instruments or tools, for example: legislation, codes of conduct, standards, registration, licensing, accreditation and performance management systems.

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93 Professor Les Copeland, *Committee Hansard*, 14 October 2005, p. 33.

94 D. Pannell, 'Voluntary versus Regulatory Approaches to Protecting the Environment in Rural Areas', *Farm Policy Journal*, vol. 2, no. 3, August Quarter 2005, pp 1-9.

95 D. Pannell, 'Voluntary versus Regulatory Approaches to Protecting the Environment in Rural Areas', *Farm Policy Journal*, vol. 2, no. 3, August Quarter 2005, p. 2.

7.113 Within the context of land management, Professor Pannell outlines six policy mechanisms that can be said to influence or control land management practices. While not all of these mechanisms would conventionally be classed as regulatory tools – namely, education and technology development – they can all be seen as forms of intervention that aim to shape and delimit land management practices:

- education, persuasion, peer pressure, technology transfer – for example, extension services
- accreditation
- beneficiary-pays policy instruments – for example, subsidies and grants
- technology development
- property-rights-based approaches – for example, tradeable permits
- polluter-pays policy instruments – for example, taxes on activities that negatively impact on the land[96]

7.114 The best policy instrument(s), Professor Pannell argues, will differ according to the problem presented, and the environmental, economic and social circumstances in which the problem presents. In some cases, voluntary measures will be adequate. In other cases, enforceable measures are required. Or a problem may be addressed through a mix of measures. Different policy responses will be required for four different types of salinity impacts: recharge areas with impacts on waterways, recharge areas with impacts on land-based assets (biodiversity and infrastructure), recharge areas with impacts on agricultural land, flood risk and remnant vegetation on farms, and salt-affected agricultural land. In turn, the selection of policy tools should be based on a range of biophysical and socio-economic factors – for example, the responsiveness of groundwaters to interventions and the farm-level economics of perennial plant-based options.[97]

Market-based instruments (MBIs)

7.115 Alongside conventional regulatory measures, the Australian and state/territory governments are currently piloting market-based instruments (MBIs) through the National Market-Based Instruments Pilots Program, which falls under the NAP. The NRM Ministerial Council announced the funding of 10 pilot projects in April 2003.

7.116 MBIs are tools that are seen to complement (in some situations, effectively replace) traditional or prescriptive regulatory mechanisms and persuasive measures. The Department of Agriculture, Fisheries and Forestry and the Department of the Environment and Heritage explained that:

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96 D. Pannell, 'Voluntary versus Regulatory Approaches to Protecting the Environment in Rural Areas', *Farm Policy Journal*, vol. 2, no. 3, August Quarter 2005, p. 2.

97 D. Pannell, 'Voluntary versus Regulatory Approaches to Protecting the Environment in Rural Areas', *Farm Policy Journal*, vol. 2, no. 3, August Quarter 2005, p. 5.

> Market Based Instruments are tools that use a range of market like approaches to positively influence the behaviour of people to improve landuse management. They are able to achieve landuse management change by altering market prices, setting a cap or altering quantities of a particular good and improving the way a market works. [98]

7.117 MBIs aim to 'correct market failure'. Market failure arises as a result of: insufficient information, for example costs are hard to assess; lack of incentives for individuals to protect a public good such as biodiversity; and externalities - individuals/organisations/industries do not carry all the costs and benefits of their actions because the impacts of these actions are felt by another user.[99]

7.118 Three types of MBIs are identified:

- priced-based MBIs – 'correct price signals to encourage a change in behaviour, leading to the adoption of more sustainable practices.' They include auctions, grants, rebates, subsidies and taxes.[100]
- quantity-based MBIs – remedy market failures by allowing for flexible compliance with NRM requirements. They include cap and trade, and offsets.[101]
- market friction MBIs – improve an existing market by facilitating private investment and/or providing more information to the market. They include mechanisms to reduce uncertainty and risk, for example insurance, approaches to leverage private investment, and product differentiation.[102]

7.119 In SA, the Committee was provided with an example of a quantity-based MBI. Mr Cole from the Department of Water, Land and Biodiversity told the Committee about the salinity zoning policy, which has been developed to ensure that SA's salinity management accords with the Murray-Darling Basin Agreement. Salinity zoning uses a system of salinity credits and debits to offset the salinity impacts from irrigation developments:

> Typically, an irrigation developer will approach our licensing people and indicate an intention to develop a parcel of land, and a particular volume of water will be transferred. We will use that underlying model to calculate the salinity debit that would derive. The South Australian government then has

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98 Department of Agriculture, Fisheries and Forestry and Department of the Environment and Heritage, *Submission 24*, p. 10.

99 Natural Heritage Trust, *Managing Our Natural Resources: Can Markets Help?*, nd., p. 3, http://www.nrm.gov.au/publications/nrm-mbi/pubs/nrm-mbi.pdf (accessed 10 January 2006).

100 Natural Heritage Trust, *Managing Our Natural Resources: Can Markets Help?*, nd., p. 4, http://www.nrm.gov.au/publications/nrm-mbi/pubs/nrm-mbi.pdf (accessed 10 January 2006).

101 Natural Heritage Trust, *Managing Our Natural Resources: Can Markets Help?*, nd., p. 7, http://www.nrm.gov.au/publications/nrm-mbi/pubs/nrm-mbi.pdf (accessed 10 January 2006).

102 Natural Heritage Trust, *Managing Our Natural Resources: Can Markets Help?*, nd., p. 9, http://www.nrm.gov.au/publications/nrm-mbi/pubs/nrm-mbi.pdf (accessed 10 January 2006).

> an obligation within the Murray-Darling Basin Ministerial Council arena to offset that debit, and within the state the irrigator has an obligation to the state to offset that debit. There are a range of strategies that could be applied to that. Some of those are still developmental, but the primary pool of credits has been generated by actions such as the rehabilitation of poor infrastructure in irrigation districts, improved irrigation practice by irrigators themselves, and salt interception schemes.[103]

Streamlining salinity investment processes

7.120 The Committee heard evidence of the need to streamline investment processes. The CRC for Plant-Based Management of Dryland Salinity argued that resources need to be targeted more effectively:

> Many of the issues associated with national programs are to do with their administration and pre-occupation with 'getting dollars on the ground'. Our analysis has identified situations where viable salinity management options are not available - that further investment in R&D or no action may be a better option than incentives or regulation. We will further develop and refine for CMA use an investment decision tool.[104]

7.121 At a public hearing in Perth, Mr Kevin Goss, CEO of the CRC, expanded on this point noting that little effort was being made to ensure cost-effective investment and that development of new technologies was hampered as a result:

> We are not observing a very strong effort on salinity management actions being made less costly with a real focus on innovation and competition to get the cost of actions down. The unfortunate consequence of grants programs is that they tend to freeze in time the technologies of the day.[105]

7.122 The CRC argued vigorously for a more streamlined, targeted and systematic approach, to be achieved through a sound decision-making framework.[106]

7.123 Professor Les Copeland from the Centre for Salinity Assessment and Management, University of Sydney, concurred with this view arguing there needs to be a sound basis for decision-making:

> I think you have got to have a basis for making decisions. Clearly the magnitude of the problem is far greater than the available resources that can be brought to bear. I think we have to recognise that we have got to do the best with what we have got. That means putting into priority where those resources are going to provide the most value, targeting problems that can make a difference, perhaps recognising that there may be areas that are

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103 Mr Phil Cole, *Committee Hansard*, 16 November 2005, p. 10.

104 CRC for Plant-Based Management of Dryland Salinity, *Submission 18*, p. 2.

105 Mr Kevin Goss, *Committee Hansard*, 18 November 2005, p. 15.

106 Mr Kevin Goss, *Committee Hansard*, 18 November 2005, p. 16.

> beyond the scope of what can be managed, and we do not really have a good framework to do that.[107]

7.124 The CSIRO submitted that a 'triage approach' is required:

> There is a need for a triage approach to salinity management for both public and private investment – some major assets (water resources, biodiversity areas of international significance, urban areas, etc.) can justify the major intervention required to protect them while other areas need to be managed to minimise the adverse impacts and maintain ecological function. Any remaining areas will require management that adapts to the more saline conditions. We need to be able to provide spatially explicit information to determine most appropriate responses. Without a robust investment prioritisation framework, there is a risk of widespread inappropriate intervention (method and scale).[108]

7.125 However, not all witnesses agreed that investment needs to be more targeted. Dr Bruce Munday expressed concern about the over-targeting of resources arguing that it can inhibit widespread cultural change:

> Sometimes I am concerned about the recommendations to target investment. Clearly, investment must be targeted, but the derisory reference to the 'vegemite approach' to public investment and so forth concerns me …I think it is very short-sighted to put all your eggs in that basket. If we funded sport or the arts in that way, we would fund only elite sports people or elite artists. We need to change the culture so that the whole community accepts the responsibility for managing our natural resources, of which managing salinity, ground water, is just one. So there does need to be encouragement for local groups to become involved.
>
> The emphasis should not just be on the money part; it is the capacity building that was alluded to before—all those sorts of things. If they miss out because they are not in the target, we will all miss out. Changing the culture is more important than anything in terms of the way in which the nation manages its natural resources.[109]

Risk management for investment planning

7.126 Professor Copeland from the Centre for Salinity Assessment and Management told the Committee that greater attention to risk analysis is required:

> In terms of the science, more work should be done on risk analysis. Are we targeting the areas where most benefit could be gained? This is a fairly new

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107 Professor Les Copeland, *Committee Hansard*, 14 October 2005, pp 36-37. See also, the Australian Conservation Foundation, *Submission 19*, p. 30.

108 CSIRO, *Submission 15*, p. 7.

109 Dr Bruce Munday, *Committee Hansard*, 16 November 2005, pp 57-58.

> area of science, particularly in natural resource management, and one that I believe should develop.[110]

7.127 The report, *Salinity Mapping Methods in the Australian Context*, similarly highlights the importance of a risk management approach to salinity management. A risk assessment framework is proposed, which takes into account the following features:

- the identification of the asset(s) at risk (e.g. water quality, crops, infrastructure, biodiversity)
- the probable timing of the risk impact
- the likelihood of the risk occurring
- an assessment of the social, economic and environmental impacts on the asset(s) if the risk occurs[111]

7.128 The next step is to work out the risk management options. That is, actions that could be undertaken to protect the asset and a cost-benefit analysis of each action, taking into consideration the value of the asset(s).[112] It should be noted that 'no action' may be the most viable option if the costs outweigh the benefits.

7.129 As discussed in Chapter 5, an updated assessment of salinity hazards and risks will be critical to sound investment planning. Mr Goss from the CRC for Plant-Based Management of Dryland Salinity explained to the Committee that an updated assessment is required to undertake cost-benefit analyses :

> The issue—and I think this is one that speaks to the recommendations coming out of the House of Representatives report—is that there is no indication to us that there is a program to update the assessment of risks and hazards associated with salinity and to give us the basis for ongoing estimation of the benefits and costs in handling the problem.[113]

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110 Professor Les Copeland, *Committee Hansard*, 14 October 2005, p. 33.

111 B. Spies & P. Woodgate, *Salinity Mapping Methods In The Australian Context*, Department of the Environment and Heritage and Department of Agriculture, Fisheries and Forestry, 2005, p. 31 & p. 67.

112 B. Spies & P. Woodgate, *Salinity Mapping Methods In The Australian Context*, Department of the Environment and Heritage and Department of Agriculture, Fisheries and Forestry, 2005, p. xii.

113 Mr Kevin Goss, *Committee Hansard*, 18 November 2005, p. 15.

Salinity investment framework 3 (SIF3)[114]

7.130 SIF3 was developed by Professor David Pannell and Dr Anna Ridley from the CRC for Plant-Based Management of Dryland Salinity. It is a decision-making framework for the selection of appropriate salinity investment options for a broad range of biophysical and socio-economic circumstances across Australia. The framework is based on research across the fields of biology, hydrogeology, resource economics, farming systems, social science and policy mechanism design. The framework is currently being field-tested in collaboration with two regional bodies: North Central CMA (Victoria) and South Coast Regional Initiative Planning Team (WA).[115] SIF3 has been developed to support a more considered, robust approach to salinity investment.

7.131 Mr Alex Campbell, Chair of the CRC for Plant-Based Management of Dryland Salinity, told the Committee that:

> SIF helps a region to decide how they can make the best investment for a multitude of outcomes that they are seeking to achieve.[116]

7.132 Mr Kevin Goss, CEO of the CRC for Plant-Based Management of Dryland Salinity, provided further detail to the Committee on the Salinity Investment Framework 3 (SIF3):

> Our observation, and in fact our analysis, is that there is still more to be done here. We need a reality check. If we run the policy instruments or options that are normally considered in an area like salinity, and that includes extension, incentives, penalties, engineering, regulation and so on, then we have to be confident that the options themselves can be adopted by those we are expecting to adopt it—that is, that it makes economic sense to do so, it is not causing other unintended consequences, and so on.
>
> What we have attempted to do is, firstly, to understand what farmers and catchment management bodies and state agencies have before them that are realistic at the moment, and what still needs a lot more work in terms of research and development to get to that point in the future, and then to look region by region at, on the back of that assessment, whether it makes sense to go down the regulatory path, to go down the incentives and financial

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114 SIF3 is separate from, but builds on, WA's state-based Salinity Investment Framework (versions 1 and 2). The Australian Conservation Foundation commented favourably on WA's framework, noting that it has generated a higher level of understanding of salinity and ways to manage it as well as improving communication between stakeholder groups. *Submission 19*, p. 29.

115 A. Ridley & D. Pannell, *Salinity Investment Framework III (SIF3): A comprehensive investment framework for dryland salinity in Australia* and *SIF3: An Investment Framework for Managing Dryland Salinity in Australia*, www.general.uwa.edu.au/u/dpannell/sif32pgr.htm (accessed 20 January 2006).

116 Mr Alex Campbell, Chairman, Cooperative Research Centre for Plant-Based Management of Dryland Salinity, *Committee Hansard* 18 November 2005, p. 21.

> assistance path, or to go cautiously in that area and put more into technology development and research and development.
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> In brief, it looks at what is at risk in terms of the value of the asset. It then looks at the salinity threat: is it high or is it low? It then looks at the responsiveness of the ground water if you put perennials into the system. And then you look at the economics of the options that you have available. Once you start to play that out, you end up with this very complex matrix which informs a lot more precisely what a catchment management authority might do.[117]

7.133 In the development of SIF3, 57 discrete circumstances were identified. Each was differentiated by a combination of the type and (financial and non-financial) value of asset at risk, the hydrological conditions, social and economic factors and the cost of management options. The strengths and limits of different responses to these varying salinity situations were assessed, and recommended or guiding responses identified.

7.134 The framework considers four different categories of salinity impacts:

- water resources
- high-value terrestrial assets such as built infrastructure (roads, buildings, pipes, communications infrastructure) and biodiversity
- dispersed assets such as agricultural land
- salt-affected land

7.135 Responses to salinity are organised into the following broad categories:

- extension – technology transfer and education
- incentives – financial incentives such as subsidies and MBIs, which are used to encourage land management practices
- penalties – negative incentives to discourage certain damaging practices
- engineering approaches
- plant-based R&D for profitable farming systems
- other R&D – e.g. research into the performance and design of engineering solutions
- no action – no response is selected when the costs of intervention outweigh the benefits[118]

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117 Mr Kevin Goss, *Committee Hansard*, 18 November 2005, p. 20.

118 A. Ridley & D. Pannell, *Salinity Investment Framework III (SIF3): A comprehensive investment framework for dryland salinity in Australia* and *SIF3: An Investment Framework for Managing Dryland Salinity in Australia*, www.general.uwa.edu.au/u/dpannell/sif32pgr.htm (accessed 20 January 2006).

7.136 Resonating with the discussions on regulation and risk management above, the rationale underpinning SIF3 is: how the problem of salinity (and other land management challenges) is best influenced and controlled should be based on solid scientific information, a risk and cost-benefit analysis, and an understanding of the strengths and weaknesses of each policy mechanism.

7.137 Asked to respond to the concern expressed by the WA Farmers Federation that there is too much focus on biodiversity (discussed above), Mr Campbell, Chair of the CRC for Plant-Based Management of Dryland Salinity told the Committee that SIF3 would be an important tool for objectively weighing up different interests:

> From their lobbying point of view, that would be their focus, and I would not speak against that proposition. But this is where the Salinity Investment Framework III starts giving an almost independent umpire overview as to what is a good investment mix through the National Action Plan or any other source of funding that you would have. I hope that once SIF3 has been field tested, as Kevin explained earlier, and we can start demonstrating that process to them, it will give them more comfort as to how a mix of investment can properly address all of the issues that you try and cover: profitability, farm landscape, protecting your environmental assets, protecting your infrastructure assets—roads, towns et cetera. Getting the balance of investment I think has to be the true focus.[119]

7.138 The Committee was particularly impressed by SIF3, which appears to offer a sound framework for making informed, objective and transparent investment decisions in a systematic way. Further, the Committee was encouraged to hear that the relevant Australian Government departments have held discussions with Professor Pannell about SIF3 and view the framework as potentially useful.[120] The Committee will watch for the outcomes of the testing phase with great interest.

Conclusion

7.139 In this chapter the Committee has canvassed significant tensions and challenges involved in salinity management: the challenge of balancing the environmental, the economic and the social, and public and private interests; the necessity of a tiered approach to salinity management: prevention, reversal and adaptation; and the importance of employing the right regulatory and policy measures to effectively tackle salinity and encourage industry engagement.

7.140 Evidence presented to the Committee on the Upper-South East Dryland Salinity Program in SA demonstrates the enormous difficulty that decision-makers face in balancing competing interests and achieving economic and environmental

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119 Mr Alex Campbell, *Committee Hansard*, 18 November 2005, p. 23.

120 Mr Tom Aldred, Department of Agriculture, Fisheries and Forestry, *Committee Hansard*, 28 February 2006, p. 43.

outcomes. It also highlights both the importance, and the challenge, of bringing all community stakeholders to the table.

7.141 Several conclusions can be drawn from the evidence discussed:

- there is no one right way to approach salinity. In some cases cure will be the aim. In other circumstances adapting to saline conditions will be the most viable option;
- there is no one solution or response to salinity. The most appropriate solution(s) will be determined by a range of factors including: topography, groundwater flow systems, soil condition, demographic circumstances and economic conditions;
- balancing competing interests and accepting trade-offs will be an ongoing dimension of salinity management; and
- salinity management options must take into account the triple-bottom-line.

7.142 The Committee has heard compelling evidence that a more rigorous and systematic approach to salinity investment is required. This would involve a comprehensive risk management approach that takes into account a broad range of bio-physical, social and economic factors. Regulatory and policy instruments would be tailored to specific situations. Such a framework would provide an objective basis from which to assess competing interests and target limited resources. It would assist in managing the tensions outlined above.

7.143 Securing greater industry involvement in salinity and the capacity to attract large-scale private investment also emerged as significant themes. The Committee believes more attention must be directed to these issues.