

A national strategy for the development of new biobased industries

Introduction

- 6.1** In Chapter 3, the committee identified impediments to the development of bioprospecting and industries based on biodiscovery. It recommended how the impediments at each stage in the development of the bioproduct chain might be overcome. Chapter 4 dealt with the regional possibilities for developing and producing new bioproducts. In this chapter, the committee considers some of the broader issues relating to the establishment of bioindustries and draws together its earlier recommendations in the context of recommending a national strategy to develop new biobased industries.
- 6.2** Value adding was a strong theme in the evidence received by the inquiry. The committee believes that it must be the underlying principle for a national strategy for developing industries based on bioprospecting. The strategy should be directed at obtaining the maximum value for Australia in terms of economic returns from the nation's biological resources, with due consideration given to the conservation and sustainable use of the resources.

Developing a strategy

6.3 The Australian Academy of Science commented in its submission on the lack of vision and forward planning by both government and industry in relation to bioindustries.¹ CSIRO made a similar point about:

[a] lack of visionary industry leadership to think globally but act locally, for which there is a role for Governments to support.

Whilst some recent initiatives by the Commonwealth and State Governments have sought to address this such as the recent Innovation Statement and the significant infrastructure investments in some States, CSIRO believes there is still a way to go.²

6.4 The committee believes that a greater emphasis on policy and planning for future development is needed. Policy development and planning should be carried out through consultation between Commonwealth, state and territory governments, industry, and the research community, with the Commonwealth government taking a leading role. They should clearly articulate a long term vision for the development of high technology industries based on bioprospecting.

6.5 This vision should incorporate the need to develop Australia's regions and foster new and innovative primary industries. It should also have regard to current and anticipated future events, such as global warming, land degradation, and the spread of salinity. As indicated in earlier chapters of this report, bioindustries offer opportunities to address aspects of these problems, for example, by:

- reducing greenhouse gas emissions;
- minimising industrial waste;
- increasing energy conversion ratios; and
- remediating polluted environments.

6.6 Submissions to the inquiry suggested some matters that the policies and plans should cover. The Western Australian government, for example, suggested that 'Australia's efforts in relation to bioprospecting will benefit from a focus on the early stages of the process, based upon early discoveries and development of leads'.³ The South Australian government proposed that an Australian International Cooperative Biodiversity Group

1 Australian Academy of Science, Submission no. 19, p. 2.

2 CSIRO, Submission no. 14, p. 19.

3 Western Australian government, Submission no. 32, p. 4.

be established. The group would involve Australian governments and research and industry organisations, and 'facilitate Australia's bioprospecting competitiveness and effectiveness in the international bioscience market'.⁴

6.7 CSIRO nominated several important topics for the strategy to address:

- the selection of market niches in which Australia has or could have a competitive advantage;
- funding for the core technologies, infrastructure and skills needed to service those niches;
- a collaborative approach to R&D that helps to assemble critical mass, and link different elements in bioproduct development;
- a bioindustry development strategy, with financial support a necessary adjunct in the face of rapid overseas technology growth and competing international investments; and
- industry as the owner and driver of bioindustrial development.⁵

6.8 The committee agrees with those who made submissions to the inquiry that government support for bioproduct development from bioprospecting should focus on the earlier stages of development. It also believes that there is an important role for agriculture, fisheries and forestry departments to promote and facilitate the use of crops developed from bioprospecting.

6.9 The NBS was announced in July 2000 with the aim of ensuring 'Australia captures the benefits arising from the medical, agricultural and environmental application of biotechnology, while protecting the safety of people and the environment'.⁶ BA, which is a collaboration of five Commonwealth Government departments,⁷ was created in May 1999 to assist in coordinating the government's approach to the non-regulatory aspects of biotechnology. Having developed the NBS, BA is now responsible for the strategy's implementation by the collaborating departments.

4 South Australian government, Submission no. 28, p. 10.

5 CSIRO, Submission no. 14, pp. 19, 29.

6 Biotechnology Australia, 'About Biotechnology Australia', http://www.biotechnology.gov.au/About_Us/index.asp, accessed 13 July 2001.

7 BA is part of the Industry, Science and Resources (ISR) portfolio and comprises the following departments: ISR; EA; AFFA; Health and Aged Care; and Education, Training and Youth Affairs. The Commonwealth Biotechnology Ministerial Council is chaired by the Minister for Industry, Science and Resources.

- 6.10** While Australia has a national biotechnology strategy, the committee believes that the opportunities for developing new industries offered by Australia's biodiversity merit much greater recognition and promotion. The committee proposes that Australia should also have a strategy for developing new biobased industries. The new strategy should be developed by BA under the umbrella of the NBS, in keeping with its 'active interest in biotechnology issues, including bioprocessing, bioprospecting and related technologies'.⁸
- 6.11** In overseeing the implementation of the NBS, BA is guided by its ministerial council, input from its five collaborating departments, and community, research and industry advice from the Biotechnology Consultative Group (to be replaced shortly by the Australian Biotechnology Advisory Council).⁹ The committee envisages that these bodies would guide the development of a national strategy for developing new biobased industries under the umbrella of the NBS. Input from the state and territory governments would also be essential, together with extensive consultation with other interested parties.
- 6.12** There is an important role for the Commonwealth government in facilitating and funding the development of the national strategy and funding its implementation. Providing adequate funding at critical times for these activities, including for infrastructure and skills development, is vital. Some funding of this kind is already being provided as indicated earlier in this report, but more needs to be done. Some urgent requirements have been addressed in the recommendations made in Chapter 3. Additional funding will be needed for other items identified in the national strategy.
- 6.13** The committee envisages that the strategy would address a number of issues such as those listed in paragraph 6.7. It would also emphasise the development of IP from Australia's mega diverse biota and promote its commercial use for long term national and international impact. A vital element of the strategy should be the provision of a one stop shop for information about financial support for bioprospecting and the early stages of commercialising biodiscoveries.
- 6.14** As indicated in paragraph 6.5, the vision for new, Australian, biobased industries must be formulated in the context of current and anticipated events. The committee believes that, for maximum effectiveness, the strategy for these new industries will need to be fully integrated with those addressing other national issues. As CSIRO pointed out, governments can accelerate bioindustrial development by the broader
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8 Biotechnology Australia, Submission no. 25, p. 2.

9 Biotechnology Australia, Submission no. 25, pp. 2-3.

agenda they set. For instance, the Commonwealth government, in the national interest, might set targets aimed at stimulating the move away from petroleum based feedstocks and their replacement by renewable raw materials.¹⁰ Such targets could be met by greater use of some of the bioprocessing options mentioned in Chapter 3, and would greatly stimulate regional, bioindustrial development.

Recommendation 20

6.15 The committee recommends that:

- **a national strategy be developed to promote bioprospecting, bioprocessing and the establishment of industries based on these activities; and**
- **Biotechnology Australia sponsor the development and implementation of the strategy.**

The strategy should:

- **indicate how bioprospecting will be used over the next two decades to contribute to existing industries and develop new ones;**
- **provide information about the government support available for bioproduct development, especially for the earlier stages in the bioproduct chain;**
- **promote collaboration and networking; and**
- **address biobased industry development in regional Australia.**

Recommendation 21

6.16 The committee recommends that Biotechnology Australia be sufficiently funded to develop and implement the strategy.

Role of Department of Agriculture, Fisheries and Forestry - Australia

- 6.17** The committee envisages an important role for AFFA in the development and implementation of the strategy. The committee is concerned, however, that AFFA appears to lack the necessary vision and enthusiasm to make an effective contribution in this respect. AFFA gave the committee the impression that it was not pursuing new possibilities in the form of new biobased industries as proactively as it should have been. This failure appeared to the committee to reflect a view, articulated by CSIRO, that the primary industry sector, which could provide feedstock for industrial bioprocessing, is perceived as being largely an 'old economy sector'.¹¹
- 6.18** AFFA told the committee that biotechnology was one of its priorities,¹² and drew attention to the work on new biobased industries that is being carried out through the RIRDC, the New Industries Development Program (NDIP) and the Farm Innovation Program (FIP) (Box 6.1). While acknowledging this work, the committee was disappointed by its small scale and by AFFA's lack of enthusiasm and knowledge about new technologies that can directly affect many traditional agricultural industries and have the potential to create new ones.
- 6.19** The committee believes that much more needs to be done. For example, the programs mentioned above are general ones which fund suitable projects based on bioprospecting, in competition with other types of project. Clearly a higher profile should be given to funding the development of industries based on bioprospecting within these programs.

11 CSIRO, Submission no. 14, p. 19.

12 Department of Agriculture, Fisheries and Forestry - Australia, Transcript of evidence, 2 April 2001, p. 30.

Box 6.1 Support by the Department of Agriculture, Fisheries and Forestry - Australia portfolio for R&D and establishment of new biobased industries

Past and present work supported by the RIRDC include projects on:

- a cholesterol lowering extract from garlic;
- the antimicrobial properties and flavours of native mint bushes;
- antiviral and antioxidant properties of bush foods and medicines; and
- the potential for Australian agriculture to supply new pharmaceutical, nutraceutical and industrial products.

The FIP is supporting the development of Australia's first native pepper plantation by Essential Oils of Tasmania. The NDIP is funding:

- Botanical Resources Australia to boost the commercial potential of its high value echinacea products, which are expected to earn the company \$4 million within five years; and
- the Australian Cartilage Company to increase its production of a liquid form of bovine cartilage for use by arthritis and cancer sufferers.

AFFA has also pursued the potential for a range of crops, particularly grain and sugar, to produce industrial products such as ethanol, methanol and bioplastics.

Source: Department of Agriculture, Fisheries and Forestry - Australia, Submission no. 35, pp. 7-9; Rural Industries Research and Development Corporation, Completed projects and research in progress, <http://www.rirdc.gov.au/comp00/>, accessed 26 July 2001.

Recommendation 22

6.20 The committee recommends that Department of Agriculture, Fisheries and Forestry - Australia:

- **give a higher profile to promoting the development and establishment of industries based on bioprospecting and bioprocessing; and**
- **work closely with AusIndustry to promote opportunities for developing industries from bioprospecting and bioprocessing.**

**Fran Bailey, MP
Committee Chair**

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