

ful implementation of interventionist policies is very difficult. "Market failure may be converted into non-market failure".

Palda is clearly sceptical of both the "myth" of Canadian lack of innovative capacity and, more generally, of Government support for innovation with its heavy emphasis on subsidy for R&D. Indeed, he argues that there is no evidence to suggest that Government subsidies to business R&D lead to greater innovativeness. So what is left for possible Government intervention in support of innovation? This is apparently "a nuanced, tricky analysis which must first uncover industries that suffer from inappropriability and then find out to what extent the knowledge spilling inside or out of this industry depresses innovative or R&D activity of both the spillers and the receptors sectors or companies. This is a tall order ..." (pp.249-250).

With such a tall order, it might be thought that there is essentially no role for Government action to promote innovation. Palda does not believe so. Along with most business commentators, he identifies the magic missing ingredient as improved "business conditions": stable currency, low interest rates, reasonable tax rates, adequate level of competition and a sound education and training system.

This is, of course, a familiar prescription in all developed economies. Judged by its point of conclusion, therefore, it would be possible to regard Palda's book as a straightforward defence of widely acknowledged (if only rarely practised) principles of good economic management. This would not do the book justice: its value is in the systematic approach by which he reaches that point, the examination of evidence as he proceeds, and the provocative way in which the argument is presented.

Martin Wardrop

Australian Science and Technology Council

Research and Development in Tropical Australia and Their Application to the Development of the Region, Final report of the Australian Science and Technology Council (Australian Government Publishing Service, Canberra, 1993), pp.xii, + 237, ISBN 0 644 32468 6.

I started reading this report with a heavy heart. First, governments for long have dealt with northern issues by commissioning reports rather than by realistic and positive action. Secondly, other recent ASTEC publications on research and technology in tropical Australia have not impressed me. The first (ASTEC 1992) was a very mixed bag of papers describing sectoral issues. While several papers were good, many had little or no new information and were carelessly written and undocumented. The second (ASTEC 1993a), a survey of northern Australian research, was well done and had some interesting but tentative conclusions. However, the constraints of lack of time and finance placed on the consultants diminished the report's value. The conclusions were hardly surprising or very useful as they were intelligently hedged with many caveats. The last two were a draft report and a summary report. The draft report (1993b) contained a number of errors and some very naive recommendations. The summary (1993c) was so full of 'shoulds', vagueness and uncritical hyperbole about the potential of bureaucratic led 'restructuring' that many researchers in the north could not take it seriously.

The final report is well presented and reflects a genuine attempt to consult widely. It is a very useful but general summary of what research is going on in the north. The general conclusions are self-evident: that more research and development of tropical Australia will bring benefits to all Australians, not just those living in the area; and that R&D must be based on ecologically sustainable development. The more outrageous recommendations of the draft report have been deleted or amended. While the authors obviously have taken note of many comments made on the draft, they may also have been overwhelmed for the report is bland and uncritical in its analysis and the recommendations are almost trite. No boats are rocked, the performance of the sacred cows — governments, major research organisations, the mining and other major industries — are not assessed or evaluated. There is vague talk of 'significant contributions', little use of an extensive literature, a conventional sectoral approach in spite of alleged concern about the inter-connectiveness of knowledge, people and the environment, and selected praise for the many useful initiatives that have, or may, take place.

In my opinion the whole exercise suffered because the tropical Australia defined has no 'community of interest' and homogeneity: the tropics south of Cooktown and east of Winton dominate demographically and in terms of potential and have very different problems and opportunities from those of tropical and 'remote' Australia. Also in spite of frequent use of the term 'ecologically sustainable development' and a chapter on Aboriginal and Torres Strait Islander people, there is a limited view of what 'development' means for these people and communities. In spite of some protestations in Chapters 1 and 2 the report deals with economic growth and the exploitation of natural resources: it says little about poverty, unemployment, inequality, defining a 'good life' or a 'good society'. More importantly, this is a report by scientists, technologists, businessmen and bureaucrats. The insights and skills of social scientists and policy analysts are missing. There is little room in the report to carefully consider *realpolitik*; to question underlying assumptions; to state why the north should be developed; to ascertain the felt needs of the northern research community; to understand the nuances of northern history; to consult with Aborigines and Torres Strait Islanders about their needs and wants; or to consider opportunity costs of undertaking so much tropical research in temperate institutions.

The report consists of four chapters. The first, an introduction, discusses the rationale of the study, gives a rather skimpy historical perspective on northern development, and describes the economy.

Chapter 2 is a sympathetic section on Aboriginal and Torres Strait Islander peoples. The authors are to be congratulated for highlighting these issues at the beginning of the report and emphasising the importance of research and technology for Aboriginal and Torres Strait Islander peoples. Health issues are dealt with well. The Chapter, however, tended to treat Aborigines as a homogeneous group and failed to address questions of consultation, participation, negotiation, and power. The chapter also fails to make a frank and honest assessment of existing policies and programs of governments. There appears to be some naivety in believing what governments and some mining companies say in their formal responses to the Royal Commission into Aboriginal Deaths in Custody or in their general publicity statements. For example, in praising a regional approach by northern governments, it ignores the fact that the regional studies of the Pilbara, the Kimberley, the Gulf and the Cape York Peninsula Land Use Study — in the case of the latter, at least in the early stages — chose to ignore Aborigines. As Crough and Christopherson (1993) have recently shown there is a tragic and probably racist tendency to underestimate the role of Aborigines in the regional economies of northern Australia. Unfortunately the rich science and technology of Aborigines and Torres Strait Islanders is ignored (except for a very short section on 'bush tucker').

While governments, and recently the president of the AMA and Senator Richardson, rec-

ognise that "the most urgent health issue in tropical Australia is to improve the health of Aboriginal and Torres Strait Islander peoples", the best this report can do is to recommend more research and innovative approaches (unspecified). The conclusions and recommendations are bland and not very helpful. Having genuflected to the altar of political correctness, Aborigines and Torres Strait Islanders are then essentially ignored.

Chapter 3 is on sectoral research and technology. It is basically descriptive and is 71 per cent of the total report. Under the headings of climate and weather, natural systems and environment, agriculture, mining and energy, tourism, physical infrastructure, health and social welfare, and education and research training, it looks at existing resources, constraints, problems, what is going on, sectoral needs and opportunities.

In my opinion this is the most useful part of the report for, backed by a useful index, it describes what is going on and what people are talking about as possibilities. No one can deny that there is a scarcity of information, a need for more and better baseline data, a need for governmental agencies to invest in environmental and other research, a need to establish a research centre in the Kimberley, a need to consult more effectively with Aborigines and Torres Strait Islanders, a need to ensure public access to technical reports (NT Government and mining companies please note!), and a need for governments to decentralize research skills. No one can deny that by finding out more about processes in the Australian tropics, more will be understood about processes in the rest of the tropical world, generally assaulted by population pressures and underdevelopment.

There are a few disappointing sections in the chapter. A case study of the Ord River Scheme ignores opportunity costs and makes the ridiculous claims that there are no subsidies to farmers (completely ignoring the huge capital cost of the scheme). The section on mining discusses problems of access but is strangely silent about the need of some in the mining industry to learn to negotiate with sensibility and understanding and to consider 'uncertainties' from an Aboriginal perspective.

The final chapter on key issues and recommendations summarises the report. Basically it is disappointing that a committee of Canberra-based bureaucrats and senior scientists, all except one based in the temperate south or the productive east coast, cannot come up with something more useful, in over a year and spending (probably) millions of dollars. Few researchers based in northern Australia would agree that there is "no major deficiency in the overall level of R&D funding provided by the Commonwealth government through its many funding agencies and research organisations" (p.174). This premise in itself tends to make the whole report a cynical exercise of missed opportunities.

The final section of the report comes up with twelve recommendations which essentially propose a strategic planning approach to funding and performance of R&D relevant to tropical Australia. According to the report it "requires a clear identification of research needs, ... development of appropriate strategies (including an appropriate cost-benefit analysis) and ... establishment of appropriate structures and arrangements" (p.174). While the recommendations are bland and unspecific about priorities and procedures, most of them encourage the setting up of new structures to serve the needs of government and research bureaucrats and economically promising industries (who, led by market forces, will probably do very well anyhow). The report grossly underestimates the amount of voluntary collaboration that already takes place in the north between researchers, research organisations and libraries and refuses to acknowledge that collaboration can be better served by encouraging existing research organisations to carry out research, to expand their networks, and to publish their results. It also places too much faith in the capacity of proposed organisations such as the Centre for Tropical Studies at Exmouth and the Northern Australia Institute for Social Research to deliver results.

Some recommendations merely reflect existing reality and conventional wisdom in the north. Who doubts that research should be concentrated in Townsville, Darwin and Rockhampton and that a research centre is needed in the Kimberley (Recommendation 2); that research in tropical Australia suffers because of the geographical and intellectual isolation of researchers; that improved access to electronic networks, travel funding and libraries would increase the effectiveness of research workers (Recommendation 3); that it would be nice to have CSIRO being a bit more active in northern Australia (Recommendation 4); that it would be a good thing to undertake more research into agriculture, horticulture, tourism, water management, downstream processing of natural resources, and community power supplies (Recommendation 6); that there should be a coordinated approach to the incursion of exotic viruses and vectors; that it would be good to develop overseas linkages in tropical research and to develop opportunities for technology marketing (Recommendation 11).

Also one wonders why the Federal Minister for Aboriginal and Torres Strait Islander Affairs, in consultation with other federal ministers, should set up a dedicated task force to look at codes of practice and to set research priorities (Recommendation 5). Surely, in the light of the rhetoric of Chapter 2, this is something for Aborigines and Torres Strait Islanders to do. However, that more participation by Aborigines in issues involving their own welfare and more funds are needed for research by and for Aborigines and Torres Strait Islanders, is a truism for anyone who visits communities. Why establish a corporation for appropriate technologies for remote communities (Recommendation 8)? Why not provide more support for the Centre for Appropriate Technology in Alice Springs or Murdoch University's Remote Area Developments Group?

The recommendation to establish collaborative structures for research into tropical woodland and savanna systems, arid zones environments, and tropical coastal and estuarine systems is to be commended (Recommendation 9). Hopefully the first will soon be a CRC based at the Northern Territory University similar to the CRC for Tropical Rainforest Ecology and Management based at James Cook University. Also Recommendation 10 to broaden the role of the Alligator Rivers Region Research Institute has long been sought by staff and others in north Australia because of the expertise they have developed on the environmental impact of mining operations. One hopes, however, that this is not used as a means of emasculating the Institute or of responding to the criticisms that mining companies and the NT Governments have made of ARRRI's work (p.113).

I was frustrated to read throughout the report about the need "for more effective coordination and collaboration" (e.g. p.183). What researchers in the region want is less bureaucratic interference and more funds so that they can get on with the job which includes the sharing of research results, publication, coordination and collaboration. It is the commercial research organisations (and mining companies in particular) that tend not to share research results, publish or 'collaborate'. One expects more concrete proposals than the final Recommendation 12 which seeks a more structured approach to research performance and priority setting. Setting up a Tropical Australia Research Task Force in association with the Office of Northern Development (which undertakes little or no research) may result in a useful lobby group being formed with access to decision-makers, but would such a group understand research needs and processes, be able to coordinate research, or to collaborate with those doing the work? It would probably have no more success than the Northern Territory Research Advisory Council which the report cites (p.156). This group had preliminary meetings in 1991 and has been inactive ever since.

As a northern based research worker I wonder if funds could have been more usefully spent. What are the opportunity costs of all the reports and special studies that are written on the north? The Report is neither a useful evaluation of research and development in north Australia nor are there any great insights offered by the study. Considering there were nearly

150 formal submissions, two formal seminars in Darwin and Townsville, numerous interviews and formal consultations, and nearly 120 written comments on the draft report, it is all rather disappointing. However, at least research and technology in Tropical Australia is on the national agenda and the report has given rise to one useful little paper (Office of the Chief Scientist 1993) on tropical health and the savanna landscape.

REFERENCES

- ASTEC, *Research and Technology in Tropical Australia: Review Papers presented at Symposia in Townsville and Darwin*, AGPS, 1992
- ASTEC, *Survey of Northern Australian Research: Summary of Main Features*, AGPS, Canberra, 1993a
- ASTEC, *Research and Technology in Tropical Australia and their Application to the Development of the Region: Draft Report*, 1993b
- ASTEC, *Research and Technology in Tropical Australia and their Application to the Development of the Region: Summary Report*, 1993c
- G. Crough and C. Christopherson, *Aboriginal People in the Economy of the Kimberley Region*, North Australia Research Unit (ANU), Darwin, 1993
- Office of the Chief Scientist, *Research and Technology in Tropical Australia: Selected Issues*, AGPS, Canberra, 1993

David Lea

North Australia Research Unit, ANU, Darwin

The Management of Science and Technology edited by Jenny Stewart

(Federalism Research Centre, Australian National University, Canberra, 1992), pp.viii + 135, ISBN 07315 1449 1.

The volume comprises revised and updated papers first given in April, 1991 at a workshop on the theme "Science, technology and Australian federalism: getting the best from the system", sponsored by the Federalism Research Centre and the Australian Science and Technology Council (ASTEC) and then published as the conference proceedings. The papers are organised under the headings of Problems and Prospects, Intergovernmental Relations in Research and Extension Services, Financing Business Development and the International Context. An introduction has been furnished by Jenny Stewart while Cliff Walsh has provided a conclusion.

The volume brings together these papers on Australian science and technology policy for students of federalism. But as a contribution to the literature on the implications for policy of Australia's federal system they are not entirely satisfactory. While there may well be serious issues in science and technology policy arising as a result of our federal system or which might best be tackled in a cooperative fashion, this volume does not succeed in drawing out those issues in any depth. Consequently, the federalism perspective has provided the