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Great Barrier Reef Study
Productivity Commission
Locked Bag 2 Collins Street East
MELBOURNE VIC 8003

Dear Sir/Madam

I hereby submit my submission to the Productivity Commission regarding your enquiry and examination into "Industries in the Great Barrier Reef Catchment and Measures to Address Declining Water Quality".

Yours sincerely

John D Cambridge
Chairman & CEO
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SUBMISSION TO THE PRODUCTIVITY COMMISSION

By

J D CAMBRIDGE

INTRODUCTION

I am an adviser and consultant to private industry in the area of foreign investment in Australia. My previous role as the Chief Executive of South Australia's Department of Industry and Trade and the Economic Development Authority, focused on promoting South Australia as the preferred destination to invest, trade and operate a business. After nearly six years in this role, and more than 21 years in the public sector, I am now a consultant advising overseas companies on investment in Australia. I was recently appointed as a Director on the board of the Fertilizer Industry Federation of Australia (FIFA).

During my time as the Head of the Economic Development Authority I was intimately involved in restructuring South Australian industry, particularly the white goods and automotive industry sectors, as well as the fruit growing industry in the Riverland area of the State. Consequently, I have a reasonable level of practical and theoretical experience with the very difficult and sometimes unpleasant task of assisting industry (and in this case the sugar and intensive agriculture sectors of Queensland) restructure.

Enviro-business is one of the fastest growing industries in the world. Overseas investors are very interested in this industry, and Australia is in a key position to leverage the investment opportunities available by implementing world's best management practices in enviro-business. In my position, I consult to a number of overseas companies that are interested in investing in both enviro-business and Australia.

In view of the current worldwide focus on enviro-business, the following submission outlines my opinions regarding the Great Barrier Reef water quality, and the potential for various policy options to restructure the Queensland agricultural sector and attract foreign investment, thus contributing to Australia's economy and effecting a transfer of skills.

According to Haynes (2001b), the greatest threat to the Great Barrier Reef has been identified as land-based run-off from agricultural activities (cattle grazing, vegetation clearance and intensive cropping) in the catchments. Fertiliser usage on most of the Great Barrier Reef catchments has increased greatly in recent decades and modern agricultural practices have been strongly linked with elevated nutrient concentrations in the aquatic environment (Haynes 2001b).

One of the key strategies in reducing the levels of nitrogen and phosphorous, which is causing much of the environmental damage, would be to use eco-efficient fertilisers. The South Australian Agricultural Research and Development Institute has tested an eco-efficient fertiliser, NutriSmart that is currently on the market and found it to be as effective (productive) as the chemical fertilisers. There are cases which demonstrate that NutriSmart performs better than the chemical fertilisers.

Eco efficient fertilisers in general are fertilisers which cause little or no leaching to the surrounding soil and waterways i.e. they are environmentally friendly while at the same time providing the necessary nutrients to the plants to improve or accelerate their growth; "environmentally and economically efficient". However, there appears to be little importance being attached to this new technology by Governments and farmers alike let alone the fertiliser industry itself.

In this submission, I have outlined some statistics concerning the farming industry and fertiliser use, examined the potential for foreign investment and have proposed four policy options the Federal and State Governments could consider to encourage the use of new eco-efficient fertilisers/technologies as elements of an industry restructuring package.

Please note, the use of the cane industry in the majority of examples is due to the size of the industry in the Great Barrier Reef catchment area and the amount of information available for this industry. The recommendations in the final section of this report apply to all agricultural industry that uses chemical fertilisers in high risk areas of Australia.

THE USE OF FERTILISERS IN THE GREAT BARRIER REEF CATCHMENT AREA

Statistics regarding land use and fertilisers

According to Haynes (2001a), more than 80% of the Great Barrier Reef catchment area supports some form of agricultural activity, with sugar cane, bananas and additional horticulture, such as mangoes and tomatoes, being the primary crops. Between 1989 and 1998 there has been an increase of more than 770 new producers in Queensland ("Authority Supports," 2002).

The levels of pollutants discharged to the reef since circa 1850 have increased between 200 and 400 percent for Nitrogen and between 300 and 1500 percent for Phosphorus (Haynes 2001a).

There are a number of reports from GBRMPA and the National Land and Water Resources Audit that indicate the pollution in the Great Barrier Reef is caused in part by poor agricultural practices.

Contribution of Agriculture to the Economy

In 1999/2000, Australia's Gross Domestic Product (GDP) was AU$620.9 billion and the agricultural industry contributed a gross value of production of AU$30.2 billion (4.6%) ("Australian Bureau of Statistics", 1998-99).

In particular, in 1998/1999, Australia's GDP was AU$595.4 billion and horticulture contributed a gross value of production of AU$5.6 billion (nearly 1%) ("Horticulture Australia" n.d.).

These two statistics demonstrate the significant value of the agriculture and specifically the horticulture industry, and the need to implement policies that will sustain its growth and contribution to GDP while at the same time reducing the negative or detrimental impacts of this sector on the environment. This is even more important in view of the industry's contribution to the trade balance given that more than 50% of Australia's exports are agriculturally based. Specifically, in 1999/2000, total horticultural exports were worth AU$1.34 billion ("Horticulture Australia" n.d.) alone.

The horticultural industry has value to Australia's economy as an exporter. The use of eco-efficient fertilisers could increase exporting, by appealing to the "clean and green" markets in the United States and Europe (developing nations are still formulating policies in this area).

Farming Industry Investment

The domestic and international market conditions are creating fiscal difficulties for the farming industry in Queensland and Australia generally. Among the concerns about profits and the effect of the drought on the harvest, farmers are also being asked to consider the impacts of their practices on the quality of the Great Barrier Reef catchment area and the Murray Darling areas.

Although the more progressive farmers may be encouraged to adopt new management practices and technologies, in the end the decision to change fertilisers and adopt new practices will come down to the bottom-line. Alternatives such as Blood & Bone and Dynamic Lifter are only used if they produce the same yields as the current chemical fertilisers.

Any new farming initiative would need to cost the same amount (or less), and be as good as if not better than, their current practices. The farming industry cannot afford to implement new production methods without being assured they will work effectively. The farming industry may also require Government support and encouragement to adopt new initiatives and new technologies such as eco-efficient fertilisers, particularly in the early stages of industry restructuring.

The farming industry has demonstrated in the past that it is open to new ideas. In the past, crops would be planted right up to the edge of water courses, therefore increasing the amount of run-off from fertilisers. This trend is changing with more farmers leaving a riparian zone that is free of crops. However, this is only one of a number of new farming practices required to create a sustainable Agricultural Sector.

Other eco-efficient practices the sugar cane industry has implemented include increased green harvesting and trash blanketing construction of artificial wetlands, tailwater recycling, trickle irrigation, soil conservation and integrated pest management. In 2001, more than 65 percent of the cane crop was cut green, and most northern areas were close to 100 percent ("Authority Supports," 1998). In this respect the Sugar Industry has made considerable changes, however, more changes are necessary and some of the harder, more fundamental changes will require good communication with the Industry and ultimately "ownership" of the change process by the Sugar Cane (as well as Cotton and Banana Industries) Industry.

New technologies and process innovation have been key ingredients in the restructuring of the Automotive Industry in Australia and will be no less important in this case. New eco-efficient fertilisers could be a solution for the environmental protection of the Reef and an impetus for foreign investment in Australia, as international biotechnology companies realise the market opportunity. Policy options, which would encourage such investment, could produce win-win situations for farmers, the Government and the environment.

ADVANTAGES FOR AUSTRALIA

The aim of the recommended policy options is to increase the quality of the water in the Great Barrier Reef catchment area by increasing the use of eco-efficient fertilisers in the adjacent land/agricultural areas. There are spin-off effects from the introduction of eco-efficient fertilisers/technology, which will benefit Australia's economy, intellectual property and best management practises in the agriculture sector of the country and in particular Queensland.

Foreign Investment through Manufacturing in Australia

There are some organisations that already manufacture eco-efficient fertilisers including CK Life Sciences, Vermitech and Global Renewables. Some of these companies manufacture locally in Australia and others manufacture overseas. By implementing policies designed at increasing the use of eco-efficient fertilisers, these companies could be encouraged to expand, develop and manufacture their products in Australia. A complementary policy would be to offer incentives to these organisations to invest and expand in Australia through setting up operations and employing Australians.

According to the Commonwealth Government's Foreign Investment Review Board (http://www.firb.gov.au/policy_pubs/policysummary1.htm) "foreign investment provides scope for higher rates of economic activity and employment … foreign direct investment also provides access to new technology, management skills and overseas markets."

Increase in skills, particularly in biotechnology

The adoption of the “New Age” eco-fertiliser technology would also effect a skills transfer and increase Australia's intellectual property in the areas of biotechnology and specifically, eco-efficient fertilisers. Biotechnology is a key focus of Federal and State Governments. In 2000, the University of Queensland opened a $105 million Institute for Molecular Bioscience. In the United States, more than 150,000 people work in the biotechnology industry, with more than US$10 billion a year invested in research and development ("University of Queensland," 2002).

The Queensland Government has already recognised a need to develop Queensland's intellectual property in the area of wastewater treatment. Through the Department of Local Government and Planning, the Advanced Wastewater Treatment Technologies scheme (AWTT), was developed to encourage the introduction into Queensland of new and/or innovative wastewater treatment technologies. A similar scheme could be introduced with respect to farm fertiliser processes and assist the take-up of environmentally friendly eco-fertilisers which have similar economic output to the farmer/grower.

The AWTT scheme has a budget of $7 million over 10 years and aims to develop technologies that provide greater financial value for cost efficiencies and environmental and social impacts. Through the AWTT scheme, international company Vermitech established an extensive pilot/demonstration plant at Redlands to identify the market potential of worm protein from a sewage treatment plant ("Department of Local Government and Planning," 2002).

Best Management Practise

The use of eco-efficient fertilisers/technologies within the agricultural industry constitutes world best management practise. There are a number of State Government initiatives that focus on eco-efficiency in the areas of water and renewable energy, and the programs are not only increasing environmental awareness, but are also increasing world best practice management awareness. By using eco-efficient fertilisers/technologies, farms are improving their current systems and setting a new world standard in farm management. This also increases the potential for more exporting, as 'green' countries would purchase products grown using eco-efficient fertilisers and Australia would gain a reputation as an expert in farm management. Not only could exports of produce/agriculture increase, but also the export of Australia's agribusiness knowledge as a service industry (similar to the export of dryland farming practice) could increase.

RECOMMENDATIONS TO THE PRODUCTIVITY COMMISSION

The farming/agricultural industry has a direct impact on the Great Barrier Reef due to the use and impact of chemical fertilisers that contain nitrogen and phosphorus. The use of eco-efficient fertilisers/technology would not only assist in improving the water quality in the catchment area, but would also open up investment opportunities within Australia for foreign companies.

Many of the reports associated with this issue have stated that immediate action is required to address the declining quality of the water entering the Great Barrier Reef.

In my opinion, immediate action is required and there are flow-on benefits to the Australian economy from the use of eco-efficient fertilisers. There are various policy

options the Federal and State Governments could consider to promote the use of eco-efficient fertilisers:

- Incentives for farmers to purchase eco-efficient fertilisers particularly in the early stages of restructuring.

- Subsidies for eco-efficient fertiliser development and manufacture.

- Legislation that requires farmers purchase eco-efficient fertilisers to pre-determined proportions.

- Research grants to universities to develop/test eco-efficient fertilisers.

All of these options would require the Government to gather public support, particularly as questions could be raised about who would fund these initiatives. For example, on 11 September 2002, the Commonwealth Government announced a $150 million 'rescue package' to assist struggling cane growers. A large portion of this package will be funded by a 20 cents per kilo increase in sugar prices. The plight of the canegrowers has public sympathy and therefore has garnered much support for the rescue package. (Cole and Odgers, 2002).

Secondly, the Government would need to work at changing farmers' core beliefs about their responsibilities in this area of farm management through better communication and re-training programmes. As discussed previously, farming practices have changed and the industry is open to new ideas but there would need to be an intensive communication program to ensure farmers adopt new attitudes towards using chemical fertilisers, and consider replacing them with eco-efficient fertilisers as well as other practices.

Incentives

Incentives could be offered to farmers that are prepared to use eco-efficient fertilisers on their crops, replacing or significantly reducing the use of chemical fertilisers. Incentive grants have already been used successfully with sugar cane farmers in the area of irrigation water. As a result of the State Government's Rural Water Use Efficiency Initiative, best management practices have been established and 96% of the surveyed cane grower irrigators exceed the minimum standards for good irrigation practice ("Canegrowers," 2001).

There are two forms of incentives the Federal and State Governments could consider – cash rebates and tax breaks. For example in the area of tax breaks, in New South Wales, farmers were eligible for tax-free fencing around their water courses, if they had not been previously fenced.

The Government could consider a scheme whereby if a farmer purchases eco-efficient fertilisers, they are eligible for either a cash rebate or tax incentive. In Queensland, the Environmental Protection Agency has implemented a Remote Area Power Supply (RAPS) scheme. Property owners that supplement diesel power generation with renewable energy generation such as solar, wind or micro-hydro power are eligible for up to a 65 percent rebate. ("Pinnacle of Power," 2002). The use of eco efficient fertilisers should be no different.

GBRMPA's report identifies catchments that are high risk, medium/high risk, medium risk, low risk and small high risk watercourses. The incentive schemes could be linked to the catchments that pose the highest risk to the Great Barrier Reef water quality.

Subsidies

Another policy option the Federal and State Governments could consider would be to offer subsidies to organisations that are developing eco-efficient fertilisers/technologies. This would decrease the costs of the fertilisers and encourage farmers to purchase them. In addition it might help break the chemical fertiliser industry out of its “indifferent” position and encourage the industry to develop new and innovative products for high risk agricultural areas.

The eco-fertiliser industry is in its infancy and therefore could receive a boost in the form of Government subsidies. This would also increase Australia's potential as an exporter of new technologies as markets around the world are realising the need for eco-efficient fertilisers (for example, Malaysia and the United States). Australia has an international reputation as an exporter of "green" agribusiness expertise and the development of an eco-fertiliser industry would link into these skill sets and propel Australia into new and developing markets.

In addition, offering subsidies and/or grants for manufacturers of eco-efficient fertilisers would encourage international companies to invest in Australia in this area. In the point made previously under the 'Advantages for Australia' section of this submission, foreign investment would contribute to the economy through employment, and would also effect a skills transfer. By making Australia an attractive place for foreign investment through subsidies, the economy gains new income sources, more employment, new skill sets and increased knowledge in new technologies.

Legislation

The Federal and/or State Governments could legislate for the use of eco-efficient fertilisers. The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) focuses on actions that are likely to have a significant impact on a matter of national environmental significance. The Great Barrier Reef is listed under the area of World Heritage properties, however the Act does not manage the actions of the agricultural industry that is already operating and contributing to the decrease in Reef water quality.

The Great Barrier Reef Marine Park Act (1975) manages the Great Barrier Reef World Heritage Area but it does not include strong controls over pollution emanating from agricultural industries. Within the State Government legislation, the non-statutory regional plans (developed under the Integrated Planning Act 1997) do not provide for the management of existing activities, such as agriculture, that impact on water quality. The Queensland Environmental Protection Agency has implemented a ChemCollect program that collects and disposes of unwanted agricultural chemicals across Queensland, but this does not reduce the reliance on chemical fertilisers.

As an example, legislation based on required minimum targets has been successfully implemented in Australia. The Renewable Energy (Electricity) Act 2000 requires

electricity wholesalers to purchase an additional 9,500 GWh of renewable energy by 2010. This is based on 2% of the current energy supply being generated through renewable sources such as wind, solar photovoltaic and hydro.

One suggestion is that the Federal Government could legislate the agricultural industry has to use a minimum level of eco-efficient fertiliser per year, therefore decreasing its reliance on chemical fertilisers. These targets could be slowly phased in over a ten year period to enable the fertiliser industry to prepare for a gradual increase in demand for eco-efficient fertilisers.

Research grants

The Australian Research Council funds a variety of research programs and the Commonwealth investment in these programs has been earmarked for an additional funding of $736.4 million over a five year period 2001/2002 to 2005/2006. One of the recently funded projects is a study into Coral Reef Ecology in the Great Barrier Reef ("Australian Research Council," 2002).

The University of Queensland has received $8.91 million in projected funding for 2002 and in 2000 opened the $105 million Institute for Molecular Bioscience. One of the key focus areas of this Institute is biotechnology ("University of Queensland," 2002).

The Commonwealth Government could invest in research projects that develop and test eco-efficient fertilisers. The Bureau of Sugar Experiment Stations has already nominated trial areas to test new management practices within the sugar cane industry and the eco-efficient fertiliser research could work in collaboration with these sites ("Bureau of Sugar," 2002).

The key component of the research program would be to share the findings with the farming industry to encourage them to use the eco-efficient fertilisers. If the fertilisers prove to be as good as and as cost-effective as the currently used chemical fertilisers, then communication to the farming industry would be vital.

The Queensland Department of Primary Industries runs a program whereby Extension Officers run field days and visit farms to discuss new initiatives in industry practice. Any research findings could dovetail into the DPI’s program.

CONCLUSION

I would like to commend the Federal and State Governments for prioritising the issue of the Great Barrier Reef's water quality, and for encouraging interested parties to participate in the process. The Great Barrier Reef is one of Australia's natural treasures and its preservation is an area of national concern. The Federal and State Governments have demonstrated great initiative in approaching this issue and seeking proactive steps to protect the reef.

In my opinion, the use of eco-efficient fertilisers would be a key solution in protecting the reef, without damaging the local agricultural industry. The reports released by GBRMPA indicate that chemical fertilisers do have an impact on the quality of water entering the reef. Yet, at the same time, the agricultural, and specifically horticultural, industries are significant contributors to both Australia's GDP and exports.

The use of eco-efficient fertilisers would not only reduce the amount of chemicals entering the Great Barrier Reef; it would also have significant economic benefits for Australia. A market for eco-efficient fertilisers would encourage foreign companies to invest and manufacture their product in Australia. This would lead to increased employment and provide economic gains.

Additionally, foreign investment would effect a skills transfer, particularly in the key focus area of bio-technology. Australia could become a world leader in best management practice for the agricultural industry. At the same time as importing financial investment and skills, Australia could export more agricultural products based on the quality and standards of our agricultural practices.

However, the adoption of eco-efficient fertilisers by farmers, and the encouragement of foreign investment would rely on Government assistance. In this submission, I have outlined four policy options that the Federal and State Governments could consider to assist in developing the eco-efficient fertiliser industry:

1. Incentives for farmers to purchase eco-efficient fertilisers.

2. Subsidies for eco-efficient fertilisers.

3. Legislation that requires farmers to purchase eco-efficient fertilisers at pre-determined proportions.

4. Research grants to universities to develop/test eco-efficient fertilisers.

Whilst there is always strong debate about the value and legitimacy of using incentives, subsidies and grants as effective measures to create change and promote industry restructuring, there is little else available to Governments to provide the impetus for change particularly in such important areas as the Great Barrier Reef water quality. I am

the first to admit that Government assistance is “an inexact science”, however, as a pragmatist it is essential that Governments of all persuasions in this instance take action quickly.

If we wait long enough to get the correct solutions it may well be too late and they may not be needed at all, consequently I sincerely advocate the need for targeted incentives and subsidies to farmers/growers and the new age fertiliser industry to initiate change at the farm level. It is important to set targets and monitor the achievement of these targets particularly with respect to the reduction in leaching and run off into the Great Barrier Reef Basin. Any subsidies and incentives should be tied to farmers meeting very rigorous targets at the farm level and these should be audited and promoted as part of a triple bottom line approach to best farming practice, particularly in the high risk agricultural areas in Australia and in this case Queensland.

After years of experience in the area of foreign investment, I conclude that targeted Government subsidies are one of the most effective ways to attract investment into Australia. Subsidies can encourage existing and international organisations to develop and manufacture products in Australia to the benefit of our economy. The agricultural industry will also benefit, as the product would be more cost-effective for farmers and the initial trials in South Australia indicate that eco-efficient fertilisers have the potential to perform better than chemical fertilisers.

Enviro-business, and specifically sustainable agriculture, is the new world trend. Many countries are realising the value of sustainable agriculture in preserving our world resources, but more importantly ensuring we can feed the growing populations of the world in a rapidly changing and more volatile global environment. It will be essential as part of creating truly sustainable agriculture to establish “clean and green” world’s best management practices. Australia is in a wonderful position to take a leadership role in the development of sustainable agriculture practices and benefit socially, economically and environmentally.

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