

AUSTRALIA'S OCEANS POLICY: A ROLE FOR SCIENCE?

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(with one text-figure)

McEwan, A., 2000 (31:v): Australia's Oceans Policy: a role for science? In Banks, M.R. & Brown, M.J. (Eds): *TASMANIA AND THE SOUTHERN OCEAN. Pap. Proc. R. Soc. Tasm.* 133(3): 5-10. <https://doi.org/10.26749/rstpp.133.3.5>
ISSN 0080--4703. Bureau of Meteorology, GPO Box 727G, Hobart, Tasmania, Australia 7001.

The Commonwealth government's announcement in December 1998 of "Australia's Oceans Policy" heralds a bid to use agreed environmental principles as a basis for better-integrated Commonwealth-State planning and management of our marine assets.

The Policy defines a comprehensive implementation structure which should ensure consultation at all levels and a better link to the ministries of the relevant Commonwealth portfolios.

A focus on "ecosystem-based planning and management" reduces emphasis on some areas which could benefit from a clearly stated national policy. Marine science and the systems for delivery of data and information are not accorded any particular importance in the implementation of the Policy.

Key Words: Australia, Commonwealth Government, ocean, marine assets, environment, management, oceans policy.

PREFACE

This paper originated in one presented at the ANZAAS Conference, Hobart, 30 September 1998, shortly before the release by the Australian (Commonwealth) Government of "Australia's Oceans Policy" (AOP) in the last days of 1998 (Commonwealth of Australia [CoA] 1998).

The ANZAAS paper was intended to arouse public interest in the formulation of a comprehensive marine policy and it foreshadowed some of the important features of the AOP as it subsequently appeared, in particular the statement of a set of "principles" that would provide a template for decision-making and the definition of an organisational structure that has the potential to interface at many levels with the diverse governmental and non-governmental bodies on which the execution of properly planned and coordinated actions would rely.

This present paper reviews the policy in the context of its utility and its implications for the marine science needed in its implementation.

WHY AUSTRALIA NEEDS AN OCEANS POLICY

Our national anthem reminds us that "our home is girt by sea". Nevertheless, it has taken Australia's adoption in 1994 of the UN Convention on the Law of the Sea (UNCLOS) to raise awareness of the fact that the share of the globe for which we have sovereign control has more than doubled and that, apart from the inestimable value of the assets contained within our 12 million km² of Exclusive Economic Zone, Australian marine-related activity is estimated in excess of \$30 billion turnover per annum (CoA 1997a). These assets are subject to a variety of State and Commonwealth government jurisdictions. Industrial practices in their usage are mainly regulated on a sectoral basis through the relevant departments. Overlaps and occasional contradictions arise in these jurisdictions and regulations. Worse, there has been little by way of an overarching and mutually agreed vision for use and custodianship and for resolving the numerous conflicts of interest, most notably between conservation and

protection in the public interest and commercial or industrial usage. Further, management by regulation rather than cooperative action does not enable us to optimise the collective public benefit of these vast assets, now or for the future.

One advantage of a comprehensive national policy is that it promises integrated planning and division of responsibility between the various national departments, research agencies and non-governmental organisations with marine interests. As matters have evolved, the main document outlining the tasks (of the Commonwealth agencies at least) to be given priority and the infrastructural needs is the Marine Science and Technology Plan (MSTP) (CoA 1999), developed in parallel but fairly independently of the AOP. The MSTP was announced in July 1999.

UNCLOS and over 50 other relevant international instruments and treaties concerning the marine environment (CoA 1997b) to which Australia is signatory, reflect concern shared by many countries about the deterioration of the seas, the limits to sustainability of their living resources and the imperative need for concerted international action. Added to this is the manifestation of global warming, which, whether human-made or not, will impose unprecedented stress on whole marine ecosystems (Hoegh-Gulberg 1999, IPCC 1999).

UNCLOS has provided a useful fulcrum for the formulation of the AOP but a major goal, reflected in the themes of the accompanying papers rather than the text of the document itself, is to secure a more integrated and cooperative marine planning and management process with the State governments. It remains to be seen whether this can be achieved, but one state (Western Australia) has already indicated its reluctance.

THE EVOLUTION OF NATIONAL COORDINATION OF OCEAN AFFAIRS – A SCIENTIFIC PERSPECTIVE

As an aid to later discussion of the AOP, it is helpful to review the development of marine science coordination within Australia.

For managers of marine science, a long-standing difficulty has been the absence of an effective coordinating structure linking with government at a level appropriate to the scale of the tasks in hand. In spite of its maritime dependency, government long turned its back on the sea. Until the 1960s there was only a handful of marine scientists (in CSIRO – Mawson *et al.* 1998) and a little uncoordinated activity within the universities, although at international level Australia had a high profile. In the 1970s there was incremental expansion, including the establishment of the Australian Institute of Marine Science (AIMS) in Townsville.

Following on reports initiated by the Australian Science and Technology Council (ASTEC) in 1979 (CoA 1979) marine science expanded rapidly in the 1980s, with major growth within AIMS and two Divisions of CSIRO, the building of a research vessel (RV *Franklin*) as a national facility and the creation of a dedicated marine research grants scheme. Inter-agency and non-governmental coordination was effected through an Australian Marine Science and Technology Council (AMSTEC) and administered through the (federal) Department of Science.

In 1988 however, that department was eliminated, and marine responsibilities were transferred to the Department of Industry, Science and Technology. Attempts at co-ordination by broadly based sectoral committees (Committee for Marine Industries, Science and Technology [C-MIST] and Australian Marine Industry and Science Council [AMISC]) were ultimately unsuccessful.

Nevertheless, liaison between the agencies continued through an informal organisation, the Heads of Marine Agencies (HOMA) group. Apart from liaison, this group assumed responsibility (through its members) for Australia's governmental representation at UNESCO's Inter-governmental Oceanographic Commission (IOC) (which it had taken part in creating in 1961 and had subsequently chaired). Among its successes, HOMA has been responsible for creating a consulting company (Australian Marine Science and Technology Company [AMSAT]) drawing upon marine expertise within the agencies and establishing the Marine Data Group (MDG) which has established frameworks for the design and implementation of systems for the archiving and management of the nation's marine data holdings. This has been facilitated by the creation of Technical Advisory Groups (TAGs) comprising practising experts in separate disciplinary areas.

In spite of its success, HOMA has had little governmental support and has no defined place within the AOP or the MSTP.

The 1990s brought a period of change, funding uncertainty and governmental pressure in marine science. Major reviews, including the "McKinnon" review in 1989 (McKinnon *et al.* 1989), reiterated the need for better policy guidance and (repeated in 1993 – McKinnon 1993) a high-level Marine Industries and Science Council supported by and answering to government.

Reflecting government policies, the agencies (especially CSIRO) and universities have been increasingly dependent on external grants and commissioned work. There has been a corresponding decline in the amount of discretionary marine research, especially at the basic end of the spectrum.

ELEMENTS OF THE POLICY

Here, the implications of the AOP will be considered. For details of the content of the Policy itself the reader is referred to the relevant documents (CoA 1998).

A Unifying Theme: Integrated and Ecosystem-based Planning and Management

Reflecting both the leading role of the Department of the Environment and the need for a form palatable to the States, the theme for the Policy, cutting across the disparate and diverse marine sectors and entrenched interests, is based on the preservation of ecosystems in a multiple-use environment. This theme also facilitates the invoking of existing treaties and commitments, for example the *Inter-governmental Agreement on the Environment* (CoA 1992) and the *Heads of Agreement on Roles and Responsibilities* 1998 (cited in CoA 1998). This theme is rendered workable by execution in the context of regional marine plans (see section on Regional Marine Plans), because the ecosystems requiring protection are generally regional in character and because the sectoral interests being accommodated are likewise regional.

As the basis of a national policy, the weakness of this theme is that it excludes all that which is *irrelevant* to some ecosystem or other. Whole industrial sectors, for example ship design, may thus be excluded from consideration. In many more cases a long bow has to be drawn to link a line of study or development to ecosystem impact. If the Policy is used to define funding priorities then some worthwhile and important studies such as climate dynamics may have to be proposed on false promises or doomed to failure!

It might be argued that such "ecologically irrelevant" activities do not need to be part of a marine policy. However, few areas of study or management are more dependent on a wide spectrum of technical knowledge than the marine applications. The "integrated" approach needs to extend beyond the parties expected to comply with the policy but should embrace, in some way, those who design its implementation.

Principles

A set of stated principles is very important to a policy, because it enables the user to derive the practices to be applied in each individual case. The principles adopted for the AOP have been founded on those contained in previously agreed documents and are well worded. They have undergone extended scrutiny and endorsement in relevant governmental and non-governmental fora and are hard to contradict, well beyond the sense of "motherhood".

As for the "themes", the only criticism is what the principles do not include.

Structural Arrangements

An essential element of a new policy of such compass is an organisational structure that will press forward with detailed planning, guide its implementation and establish processes of consultation and review. A large proportion of the

\$50 million pledged when the Policy was foreshadowed will be devoted to a structure that incorporates most of the attributes defined in models previously considered. The elements are these.

- A *National Oceans Ministerial Board* (NOMB), chaired by the Commonwealth Minister for the Environment and comprised of other commonwealth ministers with marine responsibilities. This will oversee the implementation and development of Policy issues, especially Regional Marine Plans, consult on Commonwealth expenditure and marine research priorities and promote strategic cross-agency coordination in relation to international marine fora. It will be advised by
- A *National Oceans Advisory Group* (NOAG, already established), comprised of experts, predominantly with non-government interests. This will advise on cross-sectoral and cross-jurisdictional issues and be a forum for information exchange between the ocean sectors. The secretariat for the Board and the Advisory Group will be provided by
- A *National Oceans Office* (NOO). This office will support the Board and Advisory group, will coordinate implementation of the Policy and will be the administrative interface with the States and Territories, in the development and implementation of Regional Marine Plans. These Plans will be overseen by
- *Regional Marine Plan Steering Committees* (RMPSCs), one for each nominated region), comprising regional stakeholders, both governmental and non-governmental.

It is hoped that the Australian and New Zealand Environment and Conservation Council (ANZECC) will provide a suitable forum for Commonwealth–State consultation and coordination and the address of cross-jurisdictional issues, supported by the NOO in the consideration of oceans policy.

It should be noted that existing sectoral management arrangements will not be superseded by these arrangements, and that the prime basis for jurisdictional management will continue to be the Offshore Constitutional Settlement.

The NOAG has already been convened, and the NOO is being established in Hobart. It is noted that one additional role of the office is to “provide advice to the (NOMB) on marine research priorities related to the development of the Oceans Policy”.

It is necessary to examine how the above structure relates to those that already exist and how new arrangements might add value. Existing Commonwealth and State agencies and departments need to have ownership of the total system of which they are part. This question is so broad that it will be addressed here only by considering a small part of the matrix, an example with which this author has some familiarity, *viz.* coordination relating to marine observing systems and national data management, in the context of structures already described in the earlier section on Evolution. This example serves as a good case study of the kinds of scientific issue that should benefit from the Policy since it combines

- existing activity and statutory responsibilities of existing State and Commonwealth agencies;
- a fairly large level of overlapping responsibility;
- levels of national coordination and support that are presently inadequate;

- broad cross-cutting importance in strategic terms;
- a low level of current prominence in government priorities.

A test is whether the structure can work from top to bottom. In the case of marine data, at the higher levels there needs to be an agreed national strategy with regard to marine environmental data, involving negotiation that should presumably proceed through the NOAG, in consultation with the Commonwealth Spatial Data Committee (CSDC) of ANZECC. The detailed consideration of implementation of the strategy should pass to a National Marine Data Group (NMDG) representing the agencies and departments involved. This group already exists on an informal basis as a subgroup of HOMA, and its formalisation is foreshadowed in the MSTP. It is essential that this should be guided by the people at the bench in the various national, state and university organisations who know how the technical tasks should be undertaken. These we combine in TAGs. The TAGs provide their detailed technical advice to the implementational agencies and feed up the line the issues that require higher level policy attention.

The prototype structure is shown in figure 1. It can be seen that effective linkages can be made and, in particular, that well-defined vertical pathways could be easily established. There is some duplication of the inter-agency coordination function between HOMA and NOAG, but the scale of the consultation process implies little redundancy.

REGIONAL MARINE PLANS

The essence of the Policy is in regionalised planning, stated to focus on ensuring ecosystem health and protecting marine biological diversity, while promoting sustainable marine industry and certainty and security for all marine users. It will rely on the development of a National Representative System of Marine Protected Areas (NRSMPA) and will be defined through Regional Marine Plans. These plans will be defined by objectives for regional use, zoning and allocation, sector-specific requirements, industrial or other outcomes, and the required sustainability indicators, monitoring, reporting and management control mechanisms. The Policy emphasises the need for participation and cooperation between the Commonwealth and State governments in the process.

It is clear that the development of plans with these complex requirements will rely heavily on scientific expertise, information and data in two areas:

- (i) in acquiring a working knowledge of (a) the resources and ecosystems in consideration, (b) basic biological inventories, and (c) the physical and dynamical characteristics of the region;
- (ii) as the basis for prediction, monitoring and explanation of changes in response to any implemented strategy.

THE ROLE OF MARINE SCIENCE IN THE IMPLEMENTATION OF THE POLICY

For a policy so comprehensively reliant at all levels on scientific knowledge and expertise, it is perhaps surprising and somewhat disappointing that the AOP contains little to

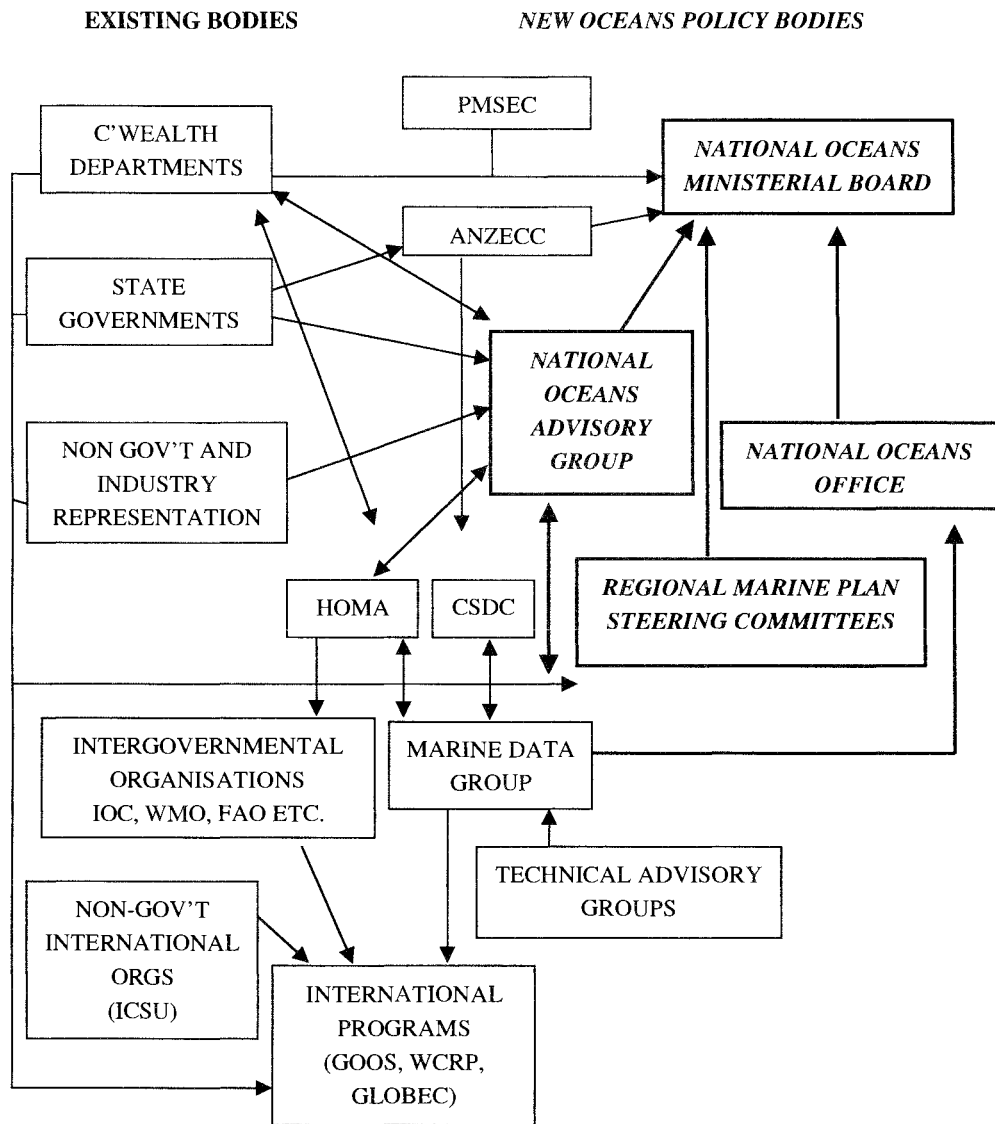


FIG. 1 — The new implementation arrangements for the AOP in relation to existing structures. For full list of acronyms, see Glossary, p.9.

reinforce the need for this scientific underpinning as an integral part of a national strategy. Indeed, it is implicit that the scientific community will answer the call as a service to the planners and implementers of the Policy, as the need arises.

The national scientific agencies will be represented in an advisory capacity in several of the groups and committees to be established. It is up to these representatives to ensure that the case for stability and continuity of support for the strategic development of marine science is put and carried to ministerial level.

The New Science Paradigm

In the above context, it is worth noting that technology, satellites, computers and the Internet are transforming the way environmental science is conducted worldwide, making it possible to combine the efforts of individual investigators in the concerted address of practical problems. Marine science, in particular, is developing this way, because the

properties observed are spatially extensive and time-variable, and observations are, therefore, expensive and difficult. The exclusive “ownership” of data becomes an impediment, and there is a global trend to integrated observing systems and shared scientific and management tools. An Australian Ocean Observing system (AOOS) is in the early stages of implementation; this focusses on the integration and expansion of systems for monitoring the basic physical variables in order to incorporate them into near real-time computer models of the regional upper ocean on an “operational” basis. Such observations and models will provide the “boundary conditions” for finer-scale models of estuaries and coasts, which are powerful new tools for management and decision-making. It is hoped that the AOOS will in due course include non-physical variables and regional datasets. The coordination of this development will rely heavily on the NMDG and its TAGs, as mentioned in the section on Structural Arrangements above, which thus become an interdependent part of the structure illustrated in figure 1.

THE INTERNATIONAL DIMENSION

Better management of the marine environment is a pressing challenge for many nations, and a lack of expertise, resources or political will is an impediment to many of them. A solution is sought in international programs coordinated through UNESCO and its IOC, the World Meteorological Organisation (WMO) and UNEP, as well as a host of bilateral and multinational programs. The Global Ocean Observing System (GOOS), to which our AOOS will align to the appropriate degree, deserves particular mention, and there are components associated with GOOS, such as the Global Coral Reef Monitoring Network and the Global Data Assimilation Experiment, with which there is a special link. There are also a number of international scientific experiments coordinated non-governmentally through ICSU. Although our marine scientific development is on a par with the leading nations, our small size, short maritime history and the extent of our marine territory makes us very much a net beneficiary in the international exchange of knowledge and data. This is particularly so with regard to satellite-derived data, where we are totally reliant on cooperative partnerships, largely through the meteorological networks or the Committee on Earth Observing Satellites (CEOS), a non-governmental liaison of national space agencies. At an even larger scale, there are plans to link all global observations under a commonly-sponsored Integrated Global Observing Strategy (IGOS).

It is very important that these linkages are recognised, maintained and sponsored as an essential part of a national oceans policy. At present they are only alluded to in terms of the NOMB's responsibility to coordinate the participation of Australian agencies in international fora.

CONCLUSION

Australia has taken a timely and important step in creating Australia's Oceans Policy. An underlying intention is to provide a basis for better Commonwealth/State alignment in marine affairs, and the theme of "integrated and ecosystem-based oceans planning and management" provides a coherent and uncontroversial means to cut across the existing sectoral structures and jurisdictions.

The Policy incorporates a useful set of principles and defines an implementational structure that should link successfully on many levels with those already in place.

In focussing on an environmental theme, the Policy does not deal with related matters on which a national policy would be desirable. In particular, the role of science and technology on which its implementation will critically rely is treated as a service, covered under the supplementary Marine Science and Technology Plan, and there is a need for better recognition of the growing paradigm of integrated knowledge and data-sharing and of developments in marine environmental science at international level.

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GLOSSARY OF ACRONYMS

AIMS	Australian Institute of Marine Science
AMISC	Australian Marine Industries and Sciences Council
AMSAT	Australian Marine Science and Technology Company
AMSTEC	Australian Marine Science and Technology Council
ANZECC	Australian and New Zealand Environment and Conservation Council
AOOS	Australian Ocean Observing System
AOP	Australia's Oceans Policy
ASTEC	Australian Science and Technology Council
CEOS	Committee on Earth Observation Satellites (international)
C-MIST	Committee for Marine Industries, Science and Technology, convened by the Department of Industry, Science and Technology
CSDC	Commonwealth Spatial Data Committee of ANZECC
FAO	Food and Agriculture Organisation of UN
GOOS	Global Ocean Observing System, sponsored by UN
GLOBEC	Global Ocean Ecosystem Dynamics Experiment of IGBP
HOMA	Heads of (Australian Government) Marine Agencies Group
ICSU	International Council of Scientific Unions
IGBP	International Geosphere-Biosphere Program (of ICSU)
IGOS	Integrated Global Observing Strategy
IOC	Intergovernmental Oceanographic Commission of UNESCO
IPCC	Intergovernmental Panel on Climate Change
MDG	Marine Data Group, at present sponsored by HOMA
MSTP	Australia's Marine Science and Technology Plan
NMDG	National Marine Data Group
NOAG	National Oceans Advisory Group
NOMB	National Oceans Ministerial Board
NOO	National Oceans Office

NRSMIPA	National Representative System of Marine Protected Areas	UNESCO	United Nations Educational, Scientific and Cultural Organisation
PMSEC	Prime Minister's Science and Engineering Council	WCRP	World Climate Research Program, sponsored by UN
RMPS Cs	Regional Marine Plan Steering Committees	WMO	World Meteorological Organisation
TAG	Technical Advisory Group		
UNCLOS	United Nations Convention on the Law of the Sea		
UNEP	United Nations Environment Program		

(accepted 5 July 1999)