

**A PROPOSAL**

TO ESTABLISH

AN

**INTERNATIONAL RESEARCH ASSISTANCE  
FOUNDATION**

IN

**AUSTRALIA**

**REPORT BY A STUDY COMMITTEE**

CANBERRA

JANUARY 1976



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## FOREWORD

In June, 1975, a small group from academic business and government circles met in Canberra to consider an important question: Would Australia's aid to developing countries in science and technology be more effective if it were managed through an independent body? The group concluded the idea had considerable merit, and endorsed a plan for a more comprehensive study of the question.

Accordingly, a small, private, Study Committee was formed. In addition to myself, it consisted of: Mr. A. F. Gurnett-Smith, Secretary (Research) CSIRO; Mr. G. B. Gresford, Scientific Adviser, Department of Foreign Affairs; and Mr. A. A. Neylan, formerly of the International Bank for Reconstruction and Development. Each member served in a personal capacity.

At the suggestion of the Director of the Australian Development Assistance Agency, Mr. D. Mentz attended a number of meetings as an adviser on the current Australian aid programme.

The Committee retained the services of Mr. H. D. McInnes, a private consultant residing in Canberra, to assist in preparing this Report.

The main work of the committee has been to assess, in broad terms, the global and regional significance of research assistance to development, Australia's potential (and actual) response to this need, and the most effective legal/administrative framework that might be adopted.

The Committee reviewed the management of research aid in several other countries, giving particular attention to the Canadian International Development Research Centre and the UK Institute of Development Studies, at the University of Sussex. In addition, the relevant activities of such Australian organizations as CSIRO and the Development Studies Centre of the Australian National University, as well as the structure of the Snowy Mountains Engineering Corporation, were also considered.

The Study Committee concluded that research assistance is one of the most effective ways of helping developing countries to achieve, *by their own efforts*, economic and social progress, and that Australia can and should do more to assist, especially in South East Asia and the Pacific. To plan and execute an expanded, specialized and highly focused programme of research assistance, the Committee has proposed that the Commonwealth Government should allocate a proportion of its aid budget and establish an independent instrumentality for this purpose. The title of *International Research Assistance Foundation* is suggested.

The Committee has counted on, and received, the warm support and co-operation of many individuals and organizations, both private and public. In particular, it would mention the help of the Director of the Australian Development Assistance Agency. Financial support was provided by Conzinc Riotinto of Australia Ltd. and Gollin & Co. The Committee offers its thanks to all persons and institutions. In addition, I wish to record our appreciation of the assistance rendered by Miss Jane McCormack in preparing the manuscript of this Report.

J. G. Crawford  
Chairman



## I. SUMMARY

Give a man a fish and you feed him for one day.  
Teach him how to fish, provide him with nets,  
and you have fed him for many days. Teach  
him as well how to make his own nets, and you  
have fed him for a lifetime.

Proverb

1. This proverb, with its origins in ancient China, summarizes the philosophy of this report. It epitomizes a point which is being recognized with increasing clarity in both affluent and poor countries – that one of the most significant paths to secure and peaceful living is for countries to *build up their own capacity to meet their problems of development*. Well planned and executed indigenous scientific research is a *sine qua non* for the realization of such capacity. Assistance from developed countries is essential if this is to be achieved within a reasonable time.
2. As Australia has committed itself to a programme of assistance to developing countries, it seems axiomatic that a reasonable proportion of its aid budget should be spent on research aid. A question of vital importance is how to manage this money most effectively.
3. An examination of mechanisms developed in Australia and abroad to meet these objectives, led the Committee to the view that an autonomous agency is needed to provide the necessary flexibility, leadership and management.
4. Accordingly, the Committee recommends that a Foundation should be established in Australia to:
  - (a) Assist developing countries and regions to build up their own research capabilities and innovative skills as well as the institutions required to solve their problems.\*
  - (b) Stimulate, encourage, co-ordinate and support financially Australian sources of such assistance.
5. To achieve these objectives, the Foundation would:
  - (i) In association with scientific and community leaders in Australia and developing countries (especially those in South East Asia and the Pacific region), identify and assess problems of practical significance to the economic and social advance of such developing countries, individually or on a regional basis;

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\* The Study Committee makes no apology for recommending this objective in almost the same words as those used by the Canadian International Development Research Centre since they define exactly what it has in mind. See Paragraph 55.

- (ii) Identify and sponsor research projects by providing scientific assistance, training, information transfer and the supply of equipment and facilities; ('Research' would include testing and demonstration at the village level as well as work in the laboratory)
- (iii) Provide leadership in marshalling the scientific and technological resources of Australia to strengthen or supplement the research capacity of developing countries;
- (iv) Contract with Australian institutions and individuals (or foreign where desirable) for the conduct of research projects on developing country problems;
- (v) Provide a focus and clearing house for the dissemination of scientific and technological information to assist scientific institutions in developing countries;
- (vi) Collaborate where desirable with other national, regional and international bodies concerned with building up the research capacities of developing countries;
- (vii) Administer funds made available to the Foundation from governmental and private sources and account for their use according to law.

## II. THE RESEARCH NEED

“To restore a proper balance between city and rural life is perhaps the greatest task in front of modern man. It is not simply a matter of raising agricultural yields so as to avoid world hunger. There is no answer to the evils of mass unemployment and mass migration into cities unless the whole level of rural life can be raised, and this requires the development of an agro-industrial culture, so that each district, each community, can offer a colourful variety of occupations to its members. ... The crucial task of this decade is to make the development effort appropriate and thereby more effective so that it will reach down to the heartland of world poverty, to two million villages.”

E. F. Schumacher  
in ‘Small is Beautiful’

6. An urgent major problem facing the international community — and hence all countries — is how to improve the scientific and technological capacities of the developing nations so that they can provide food and the basic elements of decent living standards for their peoples. They must be able to select and successfully import advanced knowledge, adapt it to local conditions as necessary, and expand it through indigenous research to meet their needs.
7. Science and technology and, more specifically, applied research, constitute one of the principal engines of development — not the only one, to be sure, but the strategic factor in most development activities. In a world characterized by severe national and regional differences in resources, productivity, income levels and general citizen well-being, the need to bridge the science and technology gap is more urgent than is often apparent. Research ability is a resource in itself which can and must be generated if other resources are to be upgraded to be of maximum benefit.
8. The need for the developing countries to build up their indigenous research capacity has not been clearly appreciated, either in the advanced countries or in the developing nations themselves. Fortunately, attitudes are now starting to change rapidly but, despite this, the world wide allocation of resources to research on development problems is still pitifully small. An estimated \$US65–70 billion (or 1.4% of GNP) is spent annually in advanced countries (other than those with socialist economies) on scientific research, but only about 2% can be described as being directed deliberately to the needs of developing countries. Research is predominantly related to products which are, for the most part, useful only in the developed world.
9. The developing countries receive some spin-off from research in affluent countries but within their own borders scarcely 0.2% of GNP is earmarked for research. National science policies, where they exist at all, are rarely integrated effectively into economic and social development plans. Lack of purpose and direction are characteristic of most indigenous research programmes and scientific communities are often weak,

fragmented and ineffectual. Government supported research institutions are, with a few notable exceptions, ill-equipped, poorly staffed and engaged for the most part in programmes of little relevance to development problems or goals. Inadequate and inappropriate science and technology training programmes prevail, especially at the universities and technical colleges. Scientists returning from advanced overseas training often find themselves frustrated by intellectual isolation and lack of direction. Many join the brain drain or engage in work less essential to the national needs. The net result is a pervasive incapacity in the developing countries to plan and manage their problem-solving research on a scale and with a degree of inventiveness indispensable to sustained national development.

### III. INTERNATIONAL RESPONSE

10. Very recently, action to correct this problem has acquired some vitality and substance. As one study group concluded: "The situation in the non-industrialized countries has been called a 'research desert', but three quarters of the world's population live in that desert. If science is to contribute to economic and social development, it is hard to find any more inspiring challenge to science policies than that of development."<sup>1</sup>
11. The developing countries as a whole have set for themselves some demanding targets. In the Strategy for the Second Development Decade adopted by the United Nations General Assembly in 1970, they agreed to reach a target of an expenditure of 1% of their GNP for research and development by 1980. (See Annex B). As far as Asia is concerned, the Economic Commission for Asia and the Far East (now the Economic and Social Commission for Asia and the Pacific) has, in its Asian Plan of Action for the Application of Science and Technology to Development (See Paragraph 15), set a higher target. The plan states that "for assimilating foreign technology, it is essential to build up a strong indigenous self-sustaining base in research and development and, to this end, countries in the region should raise the level of R&D expenditure to 1% of GNP by 1980. Major emphasis in the R&D sector should be on projects with definite socio-economic objectives". Major foreign aid donors, both governmental and private, have started to allocate more resources to research on development problems and have, as necessary, created new institutions to manage the expanded programmes.\* The dramatic agricultural innovations with wheat and rice in the 1960's have stimulated strong financial support for the nine international agricultural research centres in the developing world sponsored by the Consultative Group on International Agricultural Research since 1970. This has risen since then from \$US11million p.a. to \$US65million p.a. These moves have demonstrated how effective research can be if planned and conducted by well trained and adequately supported scientists.
12. The influential Pearson Commission on International Development in 1969 gave strong encouragement to enhanced research aid from advanced countries and, in addition, pointed out that developing countries "must develop their ability to identify their human and natural resources and the uses to which these might be put, to select those areas where science can make its greatest developmental contribution, to choose the most suitable technology and to concentrate their resources in a coherent science policy that is reflected in education and training as well as in research. The basic emphasis must be on institutions to undertake research and on governmental bodies to prepare policy decisions and assume responsibility for implementation."<sup>2</sup>
13. It is of interest to note that, as early as 1959, Australia was the first to take the lead in the United Nations in drawing attention to the important role of science and technology in development. The then Minister for External Affairs (Mr. R. G. Casey) introduced a resolution on the subject in the General Assembly which was the starting point for a continuing series of attempts to emphasize the need for increased scientific effort to

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\* It should be noted that, in a number of developed countries, deliberate steps are being taken to encourage research for developing countries. For example, in the United States President Ford has recently enlisted the help of the National Academy of Sciences and the US Department of Agriculture to assess the problems of chronic food shortages and to develop specific recommendations on how specific United States R&D capabilities can best be applied.

overcome the problems of development. In his foreword to the 8-volume report on the 1963 Geneva Conference on the Application of Science and Technology for the Benefit of Less Developed Areas which resulted from this action, the Secretary General, U Thant, noted that “Applied science can be the most powerful force in the world for raising living standards if action can be taken to harness it for that purpose – if the Governments and peoples of the world can find the will.”<sup>3</sup> This theme has been carried forward into the formulations on science and technology for the Second Development Decade (See Annex B). It was given further emphasis in 1974 and 1975 when the General Assembly adopted measures relating to the establishment of a New International Economic Order. Recently, two standing committees of the Economic and Social Council have been created to furnish guidance and support to the world wide effort, one on a technical plane, the other in political mobilization. The same theme has been repeatedly emphasized in a number of other international forums, most recently at the World Food Conference in 1974, and the Seventh Special Session of the U.N. General Assembly in 1975.

14. In 1971, the United Nations World Plan of Action for the Application of Science and Technology to Development, set out a strategy and a detailed course of action to reach by 1980 a global scientific investment for the developing world of about \$US8.5 billion – a target which, it is clear, cannot be achieved without a vastly increased effort. In analyzing eight scientific areas\* where better use of existing technology and/or the generation of new knowledge could have the greatest impact, the Plan of Action identified dozens of development problems, or deterrents to progress, calling for intensive research. Significantly, the Plan emphasized the need for social science research as well as research in the natural sciences, and stressed that priority should be given to building indigenous research capabilities in developing countries, especially for applied research.
15. As logical extensions to the World Plan of Action, the Economic and Social Council in 1972 called on the Regional Economic Commissions to prepare regional plans of action for the application of science and technology to development. Thus, in 1973, an Asian Plan of Action was completed by ECAFE (now ESCAP) and, in due course, endorsed by the United Nations. It points out that the critical areas outlined in the World Plan may not have the same order of priority in different parts of the world and selects a number of fields as “critical areas considered relevant to Asian development”.

They are:

Priority Areas for Research:

- High yielding varieties of staple foods
- Edible protein
- Fish
- Pest and vector control
- Tropical hardwoods and fibres
- Groundwater
- Weather

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\* Science and technology education; natural resources; food and agriculture; industry; transport and communications; housing, building and urban development; health; population.

Desalination

Arid Land

Industrial research and design (including metallurgy, problems of corrosion, industrial chemicals, small scale and cottage industries and handicrafts, food industry, agro-based industries, appropriate technology, maintenance, repair and standardization)

Priority Areas for the Application of Existing Knowledge:

Storage and preservation of agricultural products

Livestock and control of livestock diseases

Human disease control

Housing, building and human settlements

Improving and strengthening of science teaching

Application of modern technology for development of education

Natural resources

Human resources

Transport

Establishment of modern instrumentation facilities for analytical work

16. After reminding the developing countries of the region of their obligations (including the attainment by 1980 of an expenditure on R & D of 1% of GNP), the Asian Plan urges the *developed* countries to:
  - (a) Devote a significant share of their research expenditure to problems of the region;
  - (b) Take steps to remove the restrictive influence of patents on the transfer of technology; and
  - (c) Help the developing countries to implement the Asian Plan's major programmes through bilateral assistance in the form of expertise, funds and equipment.
17. The Asian Plan of Action emphasizes that "the selection of projects should be made through a systems study which takes the political, social and economic aspirations of the peoples of that country and region into account and indicates optimum paths to be pursued on the basis of science and technology. It is also important to define the processes through which the finally selected paths will be implemented."<sup>4</sup>
18. To sum up: a virtually global consensus underlines the urgent need for a rapid expansion as well as a qualitative strengthening of the development research capacities of the developing nations. This charge falls on the developing nations themselves to mobilize their collective will and strength, and upon the developed nations with the resources, to provide assistance.

## IV. AUSTRALIA'S RESPONSE

### Opportunity

“Because of its geographical location, not too distant from the developing countries of South East Asia, and its freedom from colonial past or pretension, Australia has an important role in that part of the world, not merely in terms of trade, but through development assistance and technical aid, including research skills.”

OECD Examiners Report on  
Science and Technology  
in Australia 1974

19. Australia has itself so clearly benefited from its ability to adapt imported technology and to conduct its own research that, in this regard, it could almost serve as a model for less developed countries. Not only is it surrounded by developing countries but its geographical isolation from foreign centres of research and learning compelled an early heavy reliance on indigenous institutions of science and technology. The diversity and uniqueness of much of the country's physiography, have forced an inventiveness, resourcefulness and basic pragmatism upon the population. As OECD examiners have recently pointed out, “Research in Australia has evolved to meet specific needs and to solve, through investigation, the problems of various sectors as they arose, or as the sectors grew in importance.”<sup>5</sup> For the past thirty-five years, especially, Australia has been a busy – and successful – workshop of technological adaptation and invention. As a result it has a ‘state of mind’ to offer developing nations.
20. Another relevant feature of Australia is the high proportion of its territory (39%) in the tropics. It is, in fact, almost the only industrial country with built-in climatic conditions for research approximating those in which one-third of the world's poorest people live. This circumstance, coupled with the equally significant proportion of arid land, has already stimulated technological advances appropriate for a number of developing countries, and bears promise of yielding more. These facts are not lost on Australia's neighbours, and expectations are running high for increased assistance from Australia in the critical areas of adaptive and applied research.
21. The primary thrust of the Asian Plan of Action lies in its delineation of twenty areas for research and application of existing knowledge considered by Asian countries as priority areas. (See Pages 6–7.) They should thus be the main aid objectives of donor countries since they represent sectors of maximum potential collaboration between host country and foreign planners and researcher. Of particular interest and significance for Australia's potential research aid is the remarkable congruity of those priority areas with those on which Australian research has been concentrated. Australia's well developed and balanced scientific community is clearly able and, the Study Committee believes, anxious to provide assistance, particularly in eight of the twenty priority areas of the Plan. It could also provide significant aid in another eight areas. Australia's unique research capabilities and scientific leadership are especially valuable in such

research areas as arid land problems, high-yield food crops, pest and vector control, groundwater research, appropriate industrial technology, livestock production, natural resource exploration and human disease control.

22. Perhaps the country's greatest opportunity lies in its deep knowledge of science and technology of the land. In the words of one authority, "Australian experience and Australian expertise in the breeding, selection, inoculation and management of leguminous plants on poor soils, which are in the forefront of the world, assume particular significance for large areas of land in the developing countries. I believe that a unique opportunity exists for this country to make a major contribution to the world food problem in the field."<sup>6</sup>
23. Another scientist believes that Australia should concentrate its research assistance on the problems of the wet-dry tropical climates that are so characteristic of northern Australia.<sup>7</sup> Further, years of extensive research on animal protein, supplemented by plant breeding and agronomic research have given Australia a potential capability in the global problem area of malnutrition. Modern food production, storage and processing technology are in highest demand in the developing countries and Australia's leadership in these fields is well established. The same is true of pest control technology, where Australia has pioneered the use of many non-chemical methods of controlling insect pests. While much of Australia's research experience lies in the area of rural development, it is not limited to this sector. It can contribute in many other fields such as roads and transport, communications, geology and minerals, marine science and health, to mention only a few examples. Such high potential provides Australia with an opportunity to make practical contributions to the research activities of the developing world.

### Actuality

24. It is clear that the demand for Australia to respond to the call for research assistance is considerable and its capacity to meet this need in the South East Asian and Pacific regions is extraordinarily high. One would expect, therefore, that the response would be substantial. In fact, it presents a mixed picture.
25. Australia supports a considerable research effort – averaging over 1% of the country's gross domestic product but this investment is aimed almost exclusively at *Australian* development. Despite the fact that approximately 70% of the R&D funds come from the public sector and nearly 60% are spent in that sector, research focused on the problems of developing countries is extremely limited. Australian research with an overseas interest tends to be almost entirely for the penetration or expansion of foreign markets. Many industrial research groups and associations in Australia – often subsidized in part by the Government – exhibit little concern for the technological problems encountered by developing countries of the region. CSIRO, itself the major force in Australian research, is precluded by its own legislation from using its funds directly for research on development problems overseas.
26. The picture in the universities is similar. Research in the eighteen universities is, for the most part, academic in nature and of marginal practical value to a developing country. The major activity by the universities in development assistance is the

Australian-Asian Universities Co-operation Scheme (AAUCS). This modest aid programme (average annual expenditure - \$A260,000) was commenced in 1969 as an inter-university training scheme to promote the upgrading of the agricultural curriculum and teaching facilities at higher educational institutions in Indonesia (and later, Malaysia and Singapore). The primary objectives are teacher training and course development although there is a small research component. Finance for the AAUCS programme is provided by the Australian Development Assistance Agency, but additional 'hidden' costs are borne by the academic community. In the words of one informed university administrator, "When we look at the small and static AAUCS budget against the potential contributions of Australia, it looks indeed a meagre undertaking."<sup>8</sup> This is in marked contrast to the known desire of universities and their members to play a much more active role in assisting developing countries, given the opportunities. The Study Committee believes that one of the principal roles of the Foundation should be to help provide such opportunities.

27. The official foreign aid programme is substantial (\$A376.9 million in 1975–76) but exact figures on the extent and direction of research assistance are difficult to assess. The allocation of \$A18 million to international organizations includes a research component and the large Papua New Guinea assistance programme (\$A207.9 million, or 55% of the total aid programme in 1975–76) includes some support for research. The research component in the PNG Assistance Programme has been estimated to be 1.8% or \$A3.5million.
28. Australia's main response to the need for assistance in research is embodied in the 'bilateral project aid programme' of the Australian Development Assistance Agency (ADAA). One hundred and eighty nine projects were approved for funding in 1975–76, totalling \$A55.3 million. Of these, twenty seven projects can be considered as having a development research component. Funding for these projects amounts to \$A6.6 million, or 12% of bilateral project aid, and 1.8% of the total ADAA programme. If the estimates for Papua New Guinea are added, these figures become \$A10.1 million and 2.6% respectively – as an indication of the maximum amount that could be described as research assistance.
29. However, analysis of the twenty seven bilateral research projects reveals a wide range in nature and size of activity. Amounts to be spent on fourteen of the projects are less than \$A25,000; five, between \$A25,000 and \$A100,000; seven others, \$A100,000 or over; and one, over a million dollars Australian. Seventy seven per cent of the total research aid funds – \$A5.1 million – are consigned to Indonesia, and \$A4.9 million of that to a single project being conducted by CSIRO under contract to ADAA. It entails the construction and operation of an animal husbandry research laboratory over a ten year period, during which time training is being provided to Indonesian scientists. During the current year the main activity in this project is in the laboratory construction. Twenty two of the twenty seven projects are in the field of agriculture (including forestry); two in health; and one each in education, engineering and social science research. Of the twenty two agriculture based projects, ten are in the field of agronomy (\$A921,000) and eight are in the fields of veterinary science and animal husbandry (\$A5.441 million). Seven of the projects are purely for the provision of equipment (\$A199,000). It is difficult to assess the real research component in these projects. For example, they include one which is concerned with ridding Bali of foot and mouth disease. While it is true that the services of skilled veterinarians are required

the actual research content of the project may not be very high.

30. One inescapable impression from this list of projects is that it represents a well intentioned but unplanned, almost random, collection of responses to requests. Unquestionably, the assistance will lead to useful accomplishments but doubts arise concerning the level of scientific expertise used in establishing priorities and assessing the significance of each project to economic development. As will be seen later in this report, there is strong evidence from trends in other countries that efficient research aid calls for distinctly different patterns of organization and management in the same way that within Australia it has been conclusively demonstrated that research can be better managed if it is separate from routine governmental administrative activities.

### Observations

31. At this point it may be valuable to set down a few observations:
  - (a) While Australia has provided some research aid, a national policy is yet to be defined;
  - (b) The experience, expertise and resources of Commonwealth Government research agencies could make a much greater contribution to such aid than at present, without serious interference to their primary responsibilities of carrying out research to meet Australia's own needs;
  - (c) State government agencies and departments (particularly departments of agriculture) which already make a contribution to aid projects in the form of personnel, represent a further important capacity;
  - (d) Australian universities, colleges of advanced education and similar bodies could be given greater opportunities and support for expanding and re-orienting their research activities *vis a vis* the developing world. (The AAUCS could well expand to serve as a vehicle for such work, as might the Development Studies Centre of the ANU and groups in other universities with similar programmes;
  - (e) More of the talent, resources and facilities in private industry could be used in research aid. A body created specifically for research aid could attract more private effort;
  - (f) Some economies of scale could be made by having some research projects based on regional needs rather than having all projects based on discrete bilateral arrangements.
32. These observations suggest the need for a more systematic and continuing analysis and evaluation of development research priorities in regions of concern to Australia and matching them with Australian capabilities in science and technology.
33. The collaboration of the nation's scientific community in such undertakings must be assured, if the desired acceleration and expansion of Australian inputs is to be effective. There seems little doubt that Australian scientists would respond, given the opportunity and the appropriate environment. The Study Committee is confident that the interest of the two scientific academies, the learned societies and appropriate technical bodies could be enlisted.

34. To meet these objectives, there is an overriding need for an organization to put it all together – an entity with the ability and the necessary powers. Such an organization should be designed to play a crucial entrepreneurial role – to investigate opportunities, plan programmes, negotiate and, if need be, modify projects, organize and contract with technical resources, and receive and manage supporting funds. It must have a managing body characterized by a deep understanding of the research needs of developing countries, by flexibility and inventiveness, capacity for risk-taking, speed in decision making and sufficient prestige and dynamism to attract and hold the top rank scientists.
35. The principal financial source for this proposed new initiative in Australian research aid must be the Australian Government, in view of the need for the organization to work within the broad spectrum of governmental policies and operations. Stated more precisely, any new organization for research aid should be a specialized complement to ADAA's broader mission, the two bodies working in full collaboration and mutual support.

## V. RESEARCH AID ELSEWHERE

36. Having concluded that a new initiative is needed in Australia to give the necessary impetus and order to an accelerated research aid programme, the Study Committee examined the approaches adopted in other parts of the world. In particular, the experience of some other major donor nations was reviewed. Four fairly discrete 'systems' or models – the United States, British, French and Canadian – were found to have points of relevance. Of these, the Canadian pattern seemed the most appropriate for the Australian situation.

### United States

37. The United States foreign aid system has gone through a number of modifications over the twenty seven years of its existence, but all non-military aid has remained under the general umbrella of one government agency. Official research aid amounts to approximately \$US30 million a year, or about 1.5% of the budget of the Agency for International Development (AID). The great majority of US-sponsored development research projects are encompassed within individual country assistance programmes, formulated annually by AID missions located in the countries and administered by the missions.
38. Research-aid projects of a global, or inter-regional nature, are programmed and managed by the AID Office of Science and Technology. This Office also provides agency wide technical backstopping, sponsors an extensive publications and conference programme, and manages the Agency's contract research activities in collaboration with the National Academy of Science, universities and specialized institutions concerned with problems of development. Altogether, the American pattern represents an effort to plan and manage a broad range of development research projects in the developing countries and in the United States.
39. The Study Committee is aware of criticism levelled against AID for its inflexibility in research aid planning and management. The Committee is also aware of increases being planned for research at scientific institutions in the US on projects of relevance to developing countries and that the President has sought the advice of the National Academy of Science on this matter. It could well happen that a more flexible and research oriented management pattern will eventually emerge.

### United Kingdom

40. With one important exception, the structure and functioning of the US and UK research aid systems are similar. The Ministry of Overseas Development (ODM), programmes and administers all Official Development Assistance, including development research. Through contractual and grant processes, it sponsors research aid which may take the form of university-based projects in Britain, or overseas-based projects assisted by teams of ODM-funded scientists working on specific problems. Ministry supported research projects tend to be small, addressed to precise questions and concentrated on

countries or regions for which Britain has had earlier administrative responsibility. In the financial year 1973–74, the Ministry spent about £Stg3,400,000 on two hundred and eighty nine development research projects, or about 1.1% of the total aid programme.

41. One distinctive element in the UK system is the Institute of Development Studies (IDS), a non-profit, autonomous, limited company established in 1966 on the initiative of the Ministry of Overseas Development. The Institute was designed ‘to undertake interdisciplinary research, consultancy and teaching’ related to the problems of developing countries. While maintaining its independent status, the IDS’s attachment to the University of Sussex provides for close and mutually supportive relationships between the two institutions. About two-thirds of the Institute’s finance (£Stg517,000 in 1974) is provided by a quinquennial grant from ODM, the rest coming from academic fees and research grants from various funding bodies, e.g. World Bank, Swedish International Development Authority, Population Council, ILO, Ford Foundation. The total professional staff of IDS numbers about sixty, of whom about a quarter are overseas at any one time performing field research or consulting.
42. The affairs of the Institute are managed by three main entities:
  - (a) A Governing Body of about twenty members, primarily appointed by the Minister of Overseas Development, chaired by the Vice Chancellor of the University of Sussex, and including as members several non-British appointees;
  - (b) A Board of Studies, the primary decision-making body, chaired by the Director of the Institute and including some seventeen other members drawn primarily from the academic sector; and
  - (c) The Director of the Institute, appointed by the Governing Body.
43. While the academic or theoretical orientation of the Institute’s activities is a prominent – even dominant – characteristic, the pattern of research projects sponsored by the Institute reflects a wide range of geographical and disciplinary interests, all concerned with useful policy changes in, or affecting, the developing world.

### France

44. France is a leader among the advanced countries in its scientific and technological aid. Primary, almost exclusive, attention is given to the francophone areas of Africa, Latin America and Oceania, which cover over thirty independent nations, including some of the most needy.
45. The key institution for the French research aid programme is ORSTOM (Office de la Recherche Scientifique et Technique Outre-Mer). Its budget in 1974 approximated \$US84 million. This body was created in 1943 (reorganized 1960) for the multiple purposes of:
  - (a) conducting basic research outside the temperate zones;
  - (b) developing a science and technology infrastructure overseas; and
  - (c) training professional personnel for these purposes.

It is sponsored jointly by the State Secretariat for Foreign Affairs and the Ministry of Education, and funded largely from the national budget. It has considerable financial autonomy. An eighteen-member Board of Trustees, selected by the Government from appropriate ministries, directs the affairs of ORSTOM. Continuing management of the Office is provided primarily by a Director-General, a Secretary-General, and sixteen functional, or technological, committees which oversee the various programmes.

46. The executive headquarters of ORSTOM is in Paris. A central scientific faculty conducts basic research and other tasks which cannot suitably be performed in the developing countries. A large overseas network of centres and missions conducts research, experimentation and training activities in the field. Throughout ORSTOM, research priorities are roughly 35% each for earth sciences and biological sciences, and 15% each for oceanography and the social sciences. ORSTOM owns and operates three oceanographic vessels and has some 3,000 workers engaged in its programme operations.
47. The conduct of specialized training courses for researchers and technicians is one of ORSTOM's major objectives. While available to French nationals on a selective basis, the courses are focused on the needs of the developing countries. They vary from in-depth two-year programmes for advanced researchers to shorter-term seminars and ad hoc programmes for technicians.
48. A second important institution for research aid in the French system is GERDAT (Groupement d'études et de recherches pour le développement de l'Agronomie Tropicale). This organization parallels ORSTOM in its scale of operations (over \$US54 million in 1974), but, as its title indicates, restricts its activities to research and development work in the field of tropical agriculture. Some four hundred and fifty researchers are engaged in sixteen specialized branches – plant physiology, entomology, crop science, soils, agricultural engineering, animal husbandry, etc. About two hundred research centres and stations in French-speaking countries, plus several temporary missions, complete the overseas network. Like ORSTOM, Paris is the administrative and scientific centre of the Institute's activities. Finance for the Institute's work is provided within the framework of French technical co-operation, by agreements with various international development funds (UNDP, FAO, World Bank, etc.), and by contracts or conventions concluded with interested governments and organizations.

### Canada

49. In very broad terms, the Canadian approach is similar to the British, i.e. a basic governmental organization, the Canadian International Development Agency (CIDA), supplemented by an independent, government supported, specialized agency to give impetus and particular authority to research. In practice, however, the two approaches are very different. The creation of the International Development Research Centre (IDRC) in 1970 to handle research aid, is now viewed as a landmark in foreign aid history, not so much for the scale of financial assistance involved, as for the imagination of its basic concept and institutional arrangements.

50. The main features of the IDRC are, indeed, distinctive. It is a statutory body with considerable independence and flexibility of operation. Its central purpose is to support research for developing countries and regions, by local scientists, and to strengthen indigenous scientific and technological institutions to make research more effective. The Centre also sponsors some research projects on developing country problems within Canada.
51. The basic legislation stipulates that the Centre be led by an International Governing Board, composed of members from developing as well as developed countries. This feature, the granting of authority by a sovereign government to an international board to commit and spend national funds, is probably its most unique feature.
52. The Governing Board of twenty-one members (eleven of whom must be Canadian) meets twice yearly to decide major policy questions, approve the annual budget set programme priorities, sanction personnel changes, and review and approve individual project proposals over \$C650,000.
53. An Executive Committee of the Board meets quarterly on programme and administrative matters. The day-to-day management is entrusted to a President, appointed by the Governor-General in Council, on the nomination of the Governing Board. Two Vice Presidents, one of whom is from a developing country, assist the President. An international headquarters staff of two hundred and sixty four professional and support personnel are in Ottawa, and another eighty six employees (exclusive of locally hired staff), at the five regional offices and project sites around the world. These three hundred and fifty employees, sixty four of whom have been recruited internationally, are outside the Canadian public service, the terms and conditions of their employment being determined by the Governing Board.
54. In the five years of its existence, the IDRC has moved effectively to understand the developing world's research requirements. In a total of two hundred and seventy four projects, over thirty have been regional in nature, forty four global (to institutions like the UN, OECD, Population Council, WHO, etc.) and forty eight have been located in Canada. In terms of world wide distribution, Africa has received 20.1%, Asia 34.8%, the Caribbean and Latin America 19.1% and global and Canada based 26%. Their subject matter reveals a striking diversity, although, as a matter of policy, emphasis from the beginning has been placed upon problems of the rural areas. Roughly 38% of the projects fall in the agriculture sector, 29% in the social sciences and human resources fields, 20% in population and health and 13% in the information sciences. (Some illustrative examples are listed in Annex C)
55. In line with the objective laid down in the Centre's Act: 'to assist the developing countries to build up their research capabilities, the innovative skills and the institutions required to solve their problems', the great majority of grants have been made to scientific institutions in the developing countries. Typically, a project goes through a lengthy identification and formulation period, often up to two years – involving extensive discussion between Centre and developing country scientists, before it is ready for review and approval by the President, Executive Committee or Governing Board, as appropriate. Following approval of a project, and initiation of implementation, IDRC requires only a minimum of reports and maintains a deliberate 'hands-off' policy, relying upon self-monitoring to keep the project moving as programmed.

56. A member of the present Study Committee held detailed discussions at the IDRC headquarters in Ottawa, and obtained opinions on the IDRC in other world capitals. These and other enquiries point to several conclusions about the Canadian system, which are of particular relevance to Australia.
- (a) The decision to establish the Centre as an autonomous, public corporation appears to have been a decisive factor in making for the operational success of the Centre. “The corporation created was not to be considered part of the public service, not to be taxable, not to be subject to Treasury Board rules.”<sup>9</sup> As a result, a maximum of operational independence has characterized IDRC’s internal management processes and has permitted a level of programme flexibility and responsiveness which would not have been possible otherwise. Involvement with the governmental bureaucracy, aside from the annual budget procedures, is largely restricted to continuing discussions with the Minister of External Affairs, the annual report to Parliament and the yearly audits of Centre accounts by the Auditor-General of Canada;
  - (b) Relations with its ‘sister agency’, the Canadian International Development Agency (CIDA), are necessarily close but tend to be informal rather than formal. The President of CIDA is a member of the Governing Board of IDRC. Overseas, the Centre’s position outside the mainstream of Canadian policy and procedure has enabled it to deal direct with private organizations as well as with government, to avoid diplomatic sensitivities and to make major commitments with a minimum of fuss and delay. In practice, it has enhanced the diplomatic reputation of Canada, without attempting directly to do so;
  - (c) Paralleling in importance the legal and operational autonomy of IDRC has been the sturdy financial support of the Government. From the outset the Government pledged a substantial sum (\$C30 million) to cover the first five years of operations and authorized an immediate deposit of \$C1 million on final approval of the IDRC Act. The Centre receives its annual public funds through a sub-vote of the CIDA vote, but estimates are normally negotiated directly with the Treasury. Government grants to IDRC have grown steadily over the past five years, both absolutely and as a percentage of total Canadian external aid. \$C33.5 million has been approved for the current year, or approximately 3.5% of the general aid programme.
  - (d) Perhaps the most innovative feature of the Canadian research aid structure has been the internationality of the Governing Board and staff of the IDRC. Although the Canadian membership of the Board outnumbered (by one) the non-Canadian, the presence of ten distinguished foreigners on the Board – six from developing countries - has exerted an immeasurable influence on IDRC’s functioning. In the words of A.F.W. Plumptre, one of the Centre’s creators: “The distinctive character and style of the Centre could not have been developed effectively if it had not been endowed with this international dimension.”<sup>10</sup>
  - (e) The Centre’s status as an international body has given it novelty and appeal to Canadians, credibility in the developing countries, and ready association with the world development community. Further, the basic legislation provides that IDRC employ non-Canadians in its technical operations and this feature has clearly added to the value and image of Centre decision making. The fact of Canada’s delegation of considerable power to an international group, coupled with the

decision to leave the words 'of Canada' out of the Centre's title, is widely seen as a symbol of the nation's commitment to providing aid for purposes delineated, not by Canada, but by the international community, and especially by the developing countries themselves.

- (f) The main activity of the Centre has been assistance to developing regions in building their own research capabilities. It has emphasized 'action-oriented' rather than academic or basic research, a reliance upon indigenous scientists rather than Canadian expatriate or 'in-house' scientists, and a fundamental trust in the judgement of developing countries concerning their own priorities and capabilities. Its projects are not confined to governmental institutions, many being with universities and similar bodies. It has also meant the evolution of a dynamic and comprehensive programme of sponsorship of science and technology 'networks' in support of global and regional research needs, with a strong accent on the co-ordination of research information flows and on giving developing world scientists multiple opportunities to share their knowledge and experiences, as well as their problems.
- (g) Although the sponsoring of research of 'mutual benefit' to the developing countries and Canada was one of the objectives in the original legislation, this has been pushed very much into the background. Mutual benefit has become 'mutual co-operation' meaning that, when useful to developing countries, research might be carried out in Canada. Canadian scientists are involved in one way or another in virtually every Centre project, wherever located. "In short, despite the fact that the Centre's programmes are directed towards the needs of the developing world, the spin-off for Canadian scientists and social scientists is, as anticipated, substantial."<sup>11</sup>

### Relevance for Australia

- 57. It is not surprising that a considerable variety of institutional forms occurs in overseas patterns of international development research aid. It is easy to emphasize the points of difference, or uniqueness, in the systems already described. It is surprising, however, how much they have in common.
- 58. For example, it has been widely recognized that a specialized organization must achieve the desired impetus and impact. In all instances, save that of the US, considerable legal, financial and operational autonomy has been accorded such organizations. A marked trend toward emphasizing research projects in the developing countries can be seen in all models, as can the emphasis upon problem-solving projects.
- 59. Another common characteristic has been the steady growth in levels of financial support, an undoubted recognition of the value of research aid and its long term nature. There is a pronounced (and growing) emphasis on the allocation of resources to research for food and agriculture, including rural development. The concept of participation in research management by the developing countries is found in both the Canadian and British systems. The importance of research aid projects being carried out in donor as well as recipient countries and the recognition of research training being part of research aid projects are other widely accepted principles. Regional needs

as well as national needs are also accepted as important in research aid planning.

60. All of these features, having been tested in one way or another, commend themselves to Australia's consideration.

VI. TOWARDS AN INTERNATIONAL RESEARCH  
ASSISTANCE ORGANIZATION SUPPORTED BY AUSTRALIA:  
AN OUTLINE

61. The studies outlined so far in this report have led the Study Committee to the firm view that Australia should have its own research aid organization.
62. The character of this organization should respond to the needs of developing countries and Australia's potential to supply them. It should reflect Australian organizational practices and the lessons learnt overseas. With these points in mind, the Committee recommends that a research aid organization be established with the following features:
- (i) The name of the organization should reflect its overseas interests, its basic purposes, and the fundamental nature of its operation. The title *International Research Assistance Foundation* is proposed. (While the Canadian experience suggests that direct indication of Australian sponsorship need not be given prominence, there could be no serious objection to the inclusion of the word "Australian" in the title).
  - (ii) The Foundation should have maximum operational independence and be established by legislation. The Committee considered the value of incorporating the proposed Foundation within the administrative structure of another organization, such as CSIRO, an Australian university, or ADAA. However, after studying the experience of other countries and the nature of their organizations, it came to the firm view that administrative independence was essential. Incorporation in CSIRO would tend to restrict its scientific interests to those of the Organization. Incorporation in a university might give undue emphasis to academic activities. Incorporation in ADAA would tend to limit its academic freedom and administrative flexibility. On balance, therefore, the Study Committee believes it essential that the body to be created must be an independent one, having the freedom to collaborate with any governmental or private scientific body according to the research needs of developing countries. At the same time, the Governing Board would operate within the overall context of Australian foreign policy in regard to the countries in which it would initiate projects.
  - (iii) The responsibilities of the Foundation should include, *inter alia*, the power to manage its own internal affairs, to employ staff and engage consultants and authorize their travel, to receive, hold and expend monies, to enter into agreements and contracts with national and international institutions, to hold or sponsor meetings, to commission research projects in Australia and overseas, and to acquire, hold and dispose of property.
  - (iv) The legal entity of the Foundation should be a Governing Board of not more than eleven members, headed by a Chairman and Vice Chairman. Members, who should serve in their personal capacity, should be outstanding individuals drawn from both the public and private sectors. Members of the Governing Board should be appointed by the Governor-General on the advice of the Minister for Foreign Affairs. Appointments would normally be for five years and renewable, although shorter term appointments,

particularly in the early stages of the Foundation's life, may be desirable. The Director of ADAA should be ex officio a member of the Board.

- (v) The Board should have the power to appoint *ad hoc* committees to advise it when necessary. Provision should also be made for establishing international panels from time to time to assist the Governing Board in making overall policy assessments of the progress of the Foundation's work.
- (vi) The executive management of the Foundation should be the responsibility of a Director, also appointed by the Governor-General, on the nomination of the Minister for Foreign Affairs.
- (vii) The Chairman of the Board should report to the Minister for Foreign Affairs on any matter the Governing Board considers to be of significance, as soon as possible after each Board meeting.
- (viii) The Minister for Foreign Affairs should table in Parliament an annual report of the activities of the Foundation, provided to him by the Governing Board, as soon as possible after the conclusion of each financial year. This report should include a statement on the finances of the Foundation from the Auditor-General.
- (ix) Staff should be appointed to the Foundation by the Board, or an Executive Sub-Committee of it, on the recommendation of the Director. Terms and conditions of appointment should be determined by the Governing Board. (It is recognized that the concurrence of the Public Service Board would be necessary and an arrangement similar to that so successfully adopted for CSIRO is envisaged.) In selecting staff, the Governing Board should ensure that emphasis is placed on scientific qualifications, field experience in developing countries and on knowledge of the processes of international development.
- (x) Because of Australia's special interests in South East Asia and the Pacific region, where the problems of development are among the most acute, and where most of Australia's official and private aid is provided, this should be the primary, although not necessarily exclusive, area of operation for the Foundation.
- (xi) The Foundation's activities should embrace the social as well as the natural sciences and concentrate on those fields in which Australia has particular scientific competence and resources. (One of the principal tasks of the Governing Board would be to set the initial priorities of the Foundation)
- (xii) The main thrust of the Foundation's programmes should be to support indigenous research through solution-oriented projects and preferably those which have multiplier effects beyond the borders of a single country.
- (xiii) The Foundation's primary role should be that of commissioning or contracting for research projects and not conducting research itself. Close collaboration with universities and colleges, governmental research agencies and industrial establishments in Australia would therefore be essential.
- (xiv) The Foundation should develop a deep understanding of the research needs and priorities as seen by developing countries and it should also play a catalytic role in working with others in the identification of projects designed to meet these needs. The Foundation's principal aim should be to encourage

and support the conduct of research projects (both governmental and non-governmental) within the developing countries themselves, with a relatively smaller proportion of its funds allocated to research in Australia or other advanced countries.

- (xv) The Foundation should establish and maintain active links with other international research bodies. It should attempt to co-ordinate its own activities with those of other research aid donors.
- (xvi) To attract the calibre of staff needed and sustain the programme of activity envisioned, financial stability for the Foundation is essential. The Foundation should seek contributions from private sources, but the Commonwealth Government should be recognized as its prime financial contributor, especially in the early years. The Government should therefore make a substantial long-term commitment to the Foundation, to cover the first five years of operation. These funds should be included in the annual foreign aid appropriation, and earmarked for the Foundation. After the establishment period, the annual allocation of money for the Foundation should rise in the second year's budget to at least \$A3 million (less than 1% of the total foreign aid appropriation). This proportion should be permitted to rise to a 3% level in the fifth year of operation of the Foundation and be maintained at least at that level. As Australia moves to honour its international pledge to devote 0.7% of its GNP to foreign aid by the year 1980, and if funds available for research assistance were maintained at that percentage, the work of the Foundation would be substantial. Annex D provides rough financial estimates for a five year period.
- (xvii) The administrative costs of the Foundation should be kept to a minimum (preferably not more than 10% of total expenditure). It is anticipated that the staff of the Foundation would be relatively small (e.g. six scientific and six administrative in the early years). Projects would be undertaken largely by short term appointees.
- (xviii) The relationship between the Foundation and the Australian Development Assistance Agency should be a symbiotic one. Planning should proceed in a complementary and supportive way by each body to avoid counterproductive uncertainties and contradictions. The practicality of this has been demonstrated in Canada. It would be advantageous for the Director of the Foundation to serve on the Advisory Board of ADAA, and for the professional staff of the two agencies to have both formal and informal mechanisms of consultation. Kindred groups in universities, CSIRO and private organizations should be encouraged to collaborate.

## ANNEX A

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7. Henzell, E.J. "What can Australia do to Increase Food Production in the Tropics?"  
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## ANNEX B

### EXTRACT FROM INTERNATIONAL DEVELOPMENT STRATEGY FOR THE SECOND UNITED NATIONS DEVELOPMENT DECADE

Concerted efforts will be made by the developing countries, with appropriate assistance from the rest of the world community, to expand their capability to apply science and technology for development so as to enable the technological gap to be significantly reduced.

Developing countries will continue to increase their expenditure on research and development and will endeavour to attain, by the end of the Decade, a minimum average level equivalent to 0.5 per cent of their gross product. They will endeavour to inculcate, among their people, an appreciation of the scientific approach which will influence all their development policies. The research programme will be oriented to the development of technologies that are in line with the circumstances and requirements of individual countries and regions. They will put particular stress on applied research and seek to develop the basic infrastructure of science and technology.

Full international co-operation will be extended for the establishment, strengthening and promotion of scientific research and technological activities which have a bearing on the expansion and modernization of the economies of developing countries. Particular attention will be devoted to fostering technologies suitable for these countries. Concentrated research efforts will be made in relation to selected problems, the solutions to which can have a catalytic effect in accelerating development. Assistance will also be provided for building up and, as appropriate, for expanding and improving research institutions in developing countries, especially on a regional or sub-regional basis. Efforts will be made to promote close co-operation between the scientific work and staff of the research centres in developing countries and between those in developed and developing countries.

Within the framework of their individual aid and technical assistance programmes, developed countries will substantially increase their aid for the direct support of science and technology in developing countries during the Decade. Consideration will be given to the question of setting a target equivalent to a specified percentage of the gross national product of developed countries at the time of the first biennial review, taking fully into account the relevant factors. Moreover the developed countries will, in their research and development programmes, assist in seeking solutions to the specified problems of developing countries and for this purpose will endeavour to provide adequate resources. Serious consideration will be given during the first biennial review to the question of setting a specified target in this field. Developed countries will make all efforts to incur in developing countries a significant proportion of their research and development expenditure on specific problems of developing countries. In co-operation with the developing countries, developed countries will continue to explore the possibility of locating some of their research and development projects in developing countries. Private foundations, institutions and organizations will be encouraged to provide further assistance for expanding and diversifying research activities of benefit to developing countries. In relation to their aid and investment policies, developed countries will assist developing countries in identifying technologies which are appropriate for their circumstances and in avoiding the utilization of scarce resources for inappropriate technologies.

Developed and developing countries and competent international organizations will draw up and implement a programme for promoting the transfer of technology to developing countries, which will include, *inter alia*, the review of international conventions of patents, the identification and reduction of obstacles to the transfer of technology to developing countries, facilitating access to patented and non-patented technology for developing countries under fair and reasonable terms and conditions, facilitating the utilization of technology transferred to developing countries in such a manner as to assist these countries in attaining their trade and development objectives, the development of technology suited to the productive structure of developing countries and measures to accelerate the development of indigenous technology.

## ANNEX C

### SOME EXAMPLES OF RESEARCH AID PROJECTS – INTERNATIONAL DEVELOPMENT RESEARCH CENTRE (CANADA)

#### REGIONAL

1. Fertility research (Southeast Asia)

For the universities of Singapore and Malaysia, and Sumatra Utara Universitas, Indonesia, to develop a co-operative network of the departments of Obstetrics and Gynaecology of these three universities for the purpose of undertaking collaborative research and training in the field of human reproduction, and establishing a central secretariat to collect data and co-ordinate the activities of the network.

March 1975, 3 years \$C263,600

2. Agro-economic rice research network

For the International Rice Research Institute (IRRI), Manila, Philippines, to identify the factors explaining the differences between actual and potential rice yields in selected farm environments, and to determine what steps must be taken to relieve the constraints to production in specific farm situations.

January, 1975, 3 years \$C600,000

3. Asian Association of Development Research and Training Institutes

For the Asian Association of Development Research and Training Institutes, Bangkok, Thailand, to establish a permanent secretariat and support activities vital to the co-ordination and effective management of the association.

June, 1974, 27 months \$C168,000

#### NATIONAL

4. Sorghum/maize (Papua New Guinea)

For the University of Papua New Guinea, to select high-yielding early-maturing varieties of sorghum and maize, investigate the possibility of inter-cropping them with sweet potato, and to train their graduate students and field staff in plant breeding and agronomic techniques.

February 1975, 2 years \$C140,000

5. By-product utilization (Guatemala), Phases I and II

For the Pan-American Health Organization, to support the Institute of Nutrition of Central America and Panama (INCAP), in Guatemala, in research aimed at eliminating toxicity in coffee pulp, so that the pulp can be safely used in animal feeds, and, in a second phase, to continue the research undertaken in Phase I and to

- test the new technology under commercial condition.
- |  |                                  |                    |
|--|----------------------------------|--------------------|
|  | Phase I – February 1973, 2 years | \$C109,716         |
|  | Phase II –                       | 3 years \$C246,800 |
6. Triticale (Lebanon)
- For the American University of Beirut, to investigate the optimum methods for growing triticale under a wide variety of ecological conditions in the Lebanon, and to compare the yield adaptation and grain quality of a number of triticale lines with durum, bread wheat and barley.
- |  |         |            |
|--|---------|------------|
|  | 2 years | \$C107,000 |
|--|---------|------------|
7. Vector control onchocerciasis (West Africa)
- For the Organisation de Coordination et de Cooperation pour la Lutte contre les Grandes Endemies (OCCGE), Bouake, and Memorial University of Newfoundland, Canada, for a collaborative research program designed to control biologically the blackfly vector of onchocerciasis (African river blindness) through a parasitic worm. Research is also taking place in Upper Volta.
- |  |                         |            |
|--|-------------------------|------------|
|  | September 1972, 3 years | \$C239,740 |
|--|-------------------------|------------|
8. Drought tolerance (Saskatoon)
- For the University of Saskatchewan, to identify the hormonal influences which affect drought tolerance in sorghum and provide indices by which plant breeders can select the highest yielding lines when grown under drought conditions.
- |  |                     |            |
|--|---------------------|------------|
|  | April 1974, 5 years | \$C672,000 |
|--|---------------------|------------|
9. Food legume processing (PRL)
- For the Prairie Regional Laboratory (PRL) of the National Research Council of Canada, Saskatoon, to conduct research on the milling of food legumes and cereals in support of current milling research being conducted in Nigeria.
- |  |                       |           |
|--|-----------------------|-----------|
|  | October 1973, 2 years | \$C26,200 |
|--|-----------------------|-----------|

## ANNEX D

### PRELIMINARY FINANCIAL PROJECTION: INTERNATIONAL RESEARCH ASSISTANCE FOUNDATION

\$Australian						
	1976-1977	1977-1978	1978-1979	1979-1980	1980-1981	TOTALS
A. Estimated Australian GNP*	\$80b.	\$88b.	\$98b.	\$105b.	\$112b.	
B. Estimated Foreign Aid Appropriation (% of GNP)	\$440m. (0.55)	\$528m. (0.60)	\$637m. (0.65)	\$735m. (0.7)	\$784m. (0.7)	\$3,124m.
C. Projected IRAF Funding (% of Total Aid)	\$2.2m. (0.5)	\$5.3m. (1.0)	\$12.8m. (2.0)	\$18.4m. (2.5)	\$23.5m. (3.0)	\$62.2m.

\* Rough assumptions, for illustrative purposes only