

UNCLASSIFIED

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

PROJECT PAPER AMENDMENT

INDONESIA

PUSPIPTEK ENERGY RESEARCH LABORATORY

497-0333

MARCH 1985

USAID/INDONESIA

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT DATA SHEET	1. TRANSACTION CODE <input checked="" type="checkbox"/> A = Add <input type="checkbox"/> C = Change <input type="checkbox"/> D = Delete	Amendment Number <u>ONE</u>	DOCUMENT CODE <u>3</u>
--	---	--------------------------------	----------------------------------

2. COUNTRY/ENTITY Indonesia	3. PROJECT NUMBER <u>497-0333</u>
---------------------------------------	---

4. BUREAU/OFFICE ASIA	<u>04</u>	5. PROJECT TITLE (maximum 40 characters) <u>PUSPIPTEK Energy Research Lab.</u>
---------------------------------	-----------	--

6. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY <u>09 30 89</u>	7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4) A. Initial FY <u>82</u> B. Quarter <u>4</u> C. Final FY <u>85</u>
--	--

8. COSTS (\$000 OR EQUIVALENT \$1 =)						
A. FUNDING SOURCE	FIRST FY <u>82</u>			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	3,100	100	3,200	10,795	1,455	12,250
(Grant)	(400)	(100)	(500)	(400)	(100)	(500)
(Loan)	(2,700)	(-)	(2,700)	(10,395)	(1,355)	(11,750)
Other U.S.						
1.						
2.						
Host Country		-			4,295	4,295
Other Donor(s)						
TOTALS	3,100	100	3,200	10,795	5,750	16,545

9. SCHEDULE OF AID FUNDING (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) ST	741-B	871	978	500	11,250		500	500	11,750
(2)									
(3)									
(4)									
TOTALS				500	11,250		500	500	11,750

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each) 968 878 874 876 873	11. SECONDARY PURPOSE CODE
---	-----------------------------------

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each) A. Code RGEN TECH B. Amount 10,000 1,750
--

13. PROJECT PURPOSE (maximum 480 characters).

To assist GOI in establishing a viable, professional energy research and development center, which will a) conduct applied energy research and technology development, b) provide support to Indonesian energy-related industries, and c) undertake technical and economic feasibility analyses on potential energy programs, projects and products, and to assist the GOI in a cooperative program with the U.S. National Academy of Sciences.

14. SCHEDULED EVALUATIONS Interim MM YY MM YY Final MM YY 08 85 08 87 06 89	15. SOURCE/ORIGIN OF GOODS AND SERVICES <input checked="" type="checkbox"/> 000 <input checked="" type="checkbox"/> 941 <input type="checkbox"/> Local <input type="checkbox"/> Other (Specify)
--	---

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)

To provide additional funding for a two-year cooperative program between the U.S. National Academy of Science and the GOI Office of the Minister of State for Research and Technology.

17. APPROVED BY	Signature William P. Fuller <i>William P. Fuller</i> Title USAID Mission Director	Date Signed MM DD YY <u>03 29 85</u>	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY
------------------------	--	--	--

TABLE OF CONTENTS

	<u>PAGE</u>
PROJECT AUTHORIZATION	
GLOSSARY OF TERMS	
I. PROJECT RATIONALE	1-3
II. DESCRIPTION OF ACTIVITIES	4
A. Biotechnology	4-5
B. Renewable Marine Resources	5-6
C. Science and Technology Management and Policy	6-7
III. COST ESTIMATE AND FINANCIAL PLAN	8
IV. IMPLEMENTATION PLAN	9-10
V. MONITORING AND EVALUATION PLAN	11
<u>ANNEXES</u>	<u>NO. OF PAGES</u>
A. Loan Application	1
B. Organization of Science and Technology Sector in Indonesia	9
C. National Academy of Sciences/National Research Council Summary Procedures	1 4
D. National Research Board Membership List	2
E. Estimated Dollar Budget	1
F. Summary Cost Estimate and Financial Plan	1
G. Projection of Expenditures by Fiscal Year	1
H. Logical Framework	1

2

PROJECT AUTHORIZATION AMENDMENT

INDONESIA

PUSPIPTEK ENERGY RESEARCH
LABORATORY
PROJECT NO. 497-0333

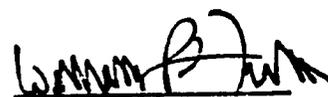
1. a. Pursuant to Section 106 of the Foreign Assistance Act of 1961, as amended, the PUSPIPTEK Energy Research Laboratory Project for Indonesia was authorized on August 26, 1982. That authorization is hereby amended as follows:

The planned obligations of loan funds are increased to \$11,750,000, with the additional amount authorized for obligation over a one-year period from the date of this authorization amendment, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs of the Project. The total planned obligations for the project are thereby increased to \$12,250,000.

- b. Paragraph 2 of the authorization is amended by adding the following new sub-paragraph: "The project will also assist the GOI to enhance the capacity of Indonesia's scientific and technological agencies to contribute to solutions of national development problems."

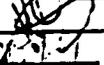
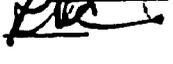
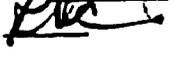
2. The authorization cited above remains in force except as hereby amended.

Signature:


William P. Fuller
Director

Date:

29/9/82

Clearances: PRO/DES:DO'Riordan 
PRO:JSperling 
FIN:RMcClure 
DD:RClark 

1891P

GLOSSARY OF TERMS

Indonesian Organizations

Office of the Minister of State for Research and Technology	MSRT
Government of Indonesia	GOI
Indonesian National Research Council	DRN
Indonesian Institute of Sciences	LIPI
Indonesian Agency for the Assessment and Application of Technology	BPPF
National Coordinating Committee on Biotechnology	NCCB

U.S. Organizations

National Academy of Science	NAS
National Research Council of the National Academy of Science	NRC
Board on Science and Technology for International Development of the National Academy of Science	BOSTID

I. PROJECT RATIONALE

1.01 Indonesia has a large population spread over a vast archipelago. Its social and economic development opportunities and problems are proportionately large and complex and require coordinated science policies and programs to make the most effective use of the nation's scientific and natural resources.

1.02 In recent years the Government of Indonesia (GOI) has created a number of research, engineering and service institutes to maximize its scientific manpower and natural resources. (See annex B for a detailed description of the organization of the Indonesian science and technology establishment.) While the institutes have done much good work in broadening the impact of science on Indonesian development, a major constraint increasingly evident to GOI policy makers, is that while goals are sound, inefficiencies and gaps still inhibit the translation of the overall goals into workable policies and programs. The major weaknesses are insufficient experience to develop policies and translate them into programs and insufficient institutional ability to manage programs to attain optimum results.

GOI awareness of this is reflected in the continued high priority of science and technology in national development. For example, REPELITA IV, the Five-Year Development Plan, 1984-1989, budgets Rp. 1,757 billion (approximately 1.6 billion dollars at the current exchange rate) for science and technology, a 233 per cent increase from the previous plan.

1.03 Resolving these gaps and formulating policies and programs must, of course, ultimately be done by the relevant agencies of the GOI. Still, consideration of possible alternatives, experience of policies and programs tried elsewhere, and the views of specialists can strengthen this formulation process.

The need for this interaction was perhaps best summed-up by President Suharto at the ceremony establishing the Indonesian National Research Council (DRN). The President stressed that Indonesia must be as independent as possible in science and technology, not at the expense of ignoring developments in other countries, but rather by adapting science and technology from outside sources to Indonesian conditions and the needs.

1.04 One valuable mechanism for adding perspective to policy formulation and program planning is establishing cooperative links with a broadly based, national-level scientific and technological institution with wide policy and program experience in both developed and developing countries. Such a link with the United States was established in 1979 when AID provided a 5-year science and technology loan. The main purpose of that cooperative venture was to strengthen the capacity of Indonesia's scientific and technological agencies to contribute to:

- solutions of national development problems;
 - creation of long-term linkages with U.S. scientific organizations and institutions;
 - greater awareness of the potential and actual role of science and technology in achieving social and economic objectives.
- 1.05 Under that project, the Minister of State for Research and Technology, who is responsible for the formulation and coordination of Indonesian policy in research and technology, invited the National Academy of Sciences (NAS)/National Research Council (NRC), through its Board on Science and Technology for International Development (BOSTID), to cooperate in planning a set of joint activities. These activities included workshops, seminars, joint studies, and advisory groups with oversight maintained by both the Ministry and by BOSTID through written and oral reports to BOSTID members and by their participation in specific activities.
- 1.06 In response to the high regard in which that program was held and to help develop and manage future programs, the GOI has asked AID for assistance in deepening the GOI's relationship with the National Academy of Sciences (NAS). The Mission met several times with GOI officials and agreed to work on developing a two-year cooperative program. In August 1984, the Mission and a senior member of NAS/NRC/BOSTID worked with GOI officials in identifying specific areas of interest. The results of that visit form the basis for this amendment.
- 1.07 As a world leader in science and technology, the U.S. in general and the NAS/NRC is in an excellent position to provide assistance. Over the past two decades the NAS has cooperated with counterpart organizations in developing countries in joint examinations of critical problems of applying science and technology to development. Because of its scientific prestige, the NAS/NRC can obtain the services of virtually any scientist, engineer or industrialist worldwide to serve on its expert committees even though participants are unpaid volunteers. (A summary of NAS/NRC procedures is provided in Annex C).
- 1.08 NAS/NRC relationship with Indonesia is longstanding. As noted, BOSTID (Board on Science and Technology for International Development of the NAS) has maintained ties with the scientific community in Indonesia since 1979 through a series of policy and planning activities in cooperation with the Office of the Minister of State for Research and Technology. Activities have included workshops on food policy, workshops on natural resources and industrial and technological research, and several workshops on transmigration and lands areas.

1.09 The GOI views the relationship it has developed with the NAS to be important and a key link to the U.S. scientific and technological community. It wishes to continue developing the relationship with NAS through an AID-funded amendment to the PUSPIPTEK project for two years of selected collaborative assistance. While this relatively modest two year effort obviously will not solve all of Indonesia's science and technology problems, it will provide needed assistance in specific areas in three important areas. .

II. DESCRIPTION OF ACTIVITIES

- 2.01 Three specific areas have been identified for assistance: biotechnology, renewable marine resource development, and science & technology management and policy. (It was also agreed to keep open the possibility of assistance in computer sciences and material sciences with details to be worked out during the cooperative agreement period.) The focus in each of these three efforts would be on applicable research and technology adaptation to specific problems related to Indonesian development. Activities relating to these areas will normally be held in Indonesia although one or two activities may be held in the U.S. Each activity is described below.
- 2.02 A. Biotechnology: As a fast-developing scientific field, biotechnology has the potential to open new opportunities in three sectors of critical importance to Indonesian development: agriculture, health, and industrial products. Indonesia's interest in developing biotechnology is understandable since it is a fertile country with a vast pool of as yet underutilized natural biological resources that can be developed into useful value-added products. Additionally, genetic engineering and biotechnology require a relatively low capital input compared with other areas of technology and are, therefore, suitable for transfer to, and further development in Indonesia.
- 2.03 The Indonesian Government plans to establish a Center for Biotechnology Research at Cibinong, West Java. A National Coordinating Committee on Biotechnology (NCCB) has been established to undertake the formation of this Center. The NCCB is chaired by Professor Didin Sastrapradja, Deputy Chairman for Natural Sciences of the Indonesian Science Institute. Its initial program focus will be on those areas that can lead to commercialization. These include the medical area which will concentrate on development of such bio-active products as vaccines to combat tropical diseases in humans and cattle, corticosteroid pharmaceutical products for family planning and tissue and embryo implant technology and cloning. Other areas of focus will include food products, both human and animal, agricultural products, veterinary techniques, and industrial fermentation.
- 2.04 Until the Center is built, the NCCB will coordinate all activities dealing with biotechnology within LIPI, the relevant inter-university centers (soon to be established under an IBRD-funded project), and the research institutes of specific Departments (Ministries). The Indonesian officials concerned with the establishment of the Center plan to collaborate with NAS/NRC in its development. This will include manpower and specific program planning as well as assistance with the scale-up of activities from the research and pilot stage to industrial development.

2.05 NRC will establish an advisory committee of up to three individuals who will meet with members of the Indonesian National Coordinating Committee on Biotechnology up to three times during the period of this collaborative effort to review the plans for the Center, suggest manpower areas that need to be strengthened and plan future joint activities. In addition, the NRC will assist in efforts pertaining to scientific infrastructure building as well as long-range planning activities.

2.06 The activities to be undertaken in this cooperative program link directly with the Mission's assistance goals stated in the Country Development Strategy Statement (CDSS). This project sub-element is also supportive of the Agency's policy of promoting science and technology in AID recipient countries. The possibilities in the area of biotechnology are almost limitless, especially in Indonesia which has such an abundance of natural resources. This cooperative program in biotechnology could lead to interventions which will have a positive impact in a number of different areas of strategic importance to the Mission's stated goals. As discussed in paragraphs 2.02 and 2.03 above, the initial focus of the biotechnology program will be in areas which will lead to commercialization with particular emphasis in development of products in the medical and agricultural areas. Some of these developments relate directly to health and family planning and thereby provide direct links to our strategy of assisting Indonesia to reduce its morbidity and mortality for infants, children under five, and women of reproductive age, and to achieve its national goal of lowering the crude birth rate from 32 to 22 per 1,000 population by the end of this decade. In the agricultural area this project element will assist Indonesia in developing food products and food processing methods nutritionally and economically advantageous to the country. It may also include assistance in the development of technology in agricultural pest control and in tissue and embryo implant technology. These interventions in the agriculture sector are directly supportive of the Mission's CDSS goal of strengthening food production. Because new industries which might result from this assistance in biotechnology in the medical and agricultural fields would tend to require relatively high labor input, this also creates a direct link to our goal of increasing off-farm employment.

2.07 B. Renewable Marine Resources Development: Indonesia is blessed with the most diverse shallow marine biota in the world. Marine scientists are now learning that the most prominent marine organisms often contain chemicals which have application to other fields, for example, pharmaceuticals.

In addition, the coral reefs of the Indo-Pacific ocean are a potential source of products other than fish. The most obvious of these are algal extracts for use as food extenders, pet food, paint bases, drying time extenders and other products. Yet despite this, the marine resources of Indonesia are seriously underexploited.

- 2.08 The 5-year National Development Plan recognizes this and emphasizes areas of marine science including major programs on the inventory and evaluation of marine resources and studies of the marine environment. Two specific areas are identified for joint collaboration between LIPI's Institute of Oceanology (LON) and NAS/NRC--non-fishery marine resources and marine pollution.
- 2.09 NAS/NRC assistance would be given to help address some of these issues. In the non-fishery marine resource area, for example, NAS/NRC assistance could focus on identifying biologically active chemicals from marine organisms and industrial products from living marine resources.
- 2.10 In the area of marine pollution in the coastal zone areas, NAS will assist in developing a marine pollution monitoring network. The exact activities to be undertaken would be developed jointly by a small U.S.-Indonesian overview committee meeting two or three times during the two year period in Indonesia and the U.S. The overview committee would also assist in identifying training needs of Indonesians and potential institutions for either short or long-term training.
- 2.11 This activity provides a strong linkage to our CDSS through its potential for development of commercial products which could have a positive impact in the areas of health, family planning, and nutrition as well as increasing off-farm employment through creating more jobs in these new labor-intensive industries.
- 2.12 C. Science and Technology Management and Policy: Many of the past joint NRC activities in Indonesia have considered science and technology management and policy. The Office of the Minister of State for Research and Technology is currently establishing appropriate operational policies and procedures of the recently-established Indonesian National Research Council (DRN) as well as for a proposed Indonesian National Academy of Sciences. The DRN formalizes and consolidates already existing institutions and functions into one organization and is chaired by Minister Habibie. A major mandate of the DRN is to formulate development plans and to evaluate major national programs under the Five Year Plan for their compatibility with the overall scientific and technological development strategy of the GOI. NAS/NRC assistance here would be to help the DRN fulfill that mandate by assisting DRN to establish management and policy guidelines which will assure that Indonesia's limited resources are used wisely in the field of science and technology. Annex D contains a listing of the members of the DRN and their organizations.

- 2.13 The Office of the Minister of State for Research and Technology will shortly undertake a long-term planning strategy for agricultural production. The NAS/NRC would provide assistance in this area by providing American counterparts to review plans, suggest appropriate computer simulations for application in the exercise and hold workshops to share the lessons learned from similar experiences. This would be supportive of Mission efforts in the Applied Agricultural Research project (497-0302) and the Agricultural Planning II project (497-0342).
- 2.14 The science and technology management and policy activity will support Mission strategy in Indonesia through assistance in institution building to the newly created DRN. Also, it is anticipated that the NAS/NRC may be instrumental in helping to identify Indonesian candidates for long-term training in the science field. This contribution forms a direct link to Mission strategy in human resource development. The GOI has requested that one million dollars be set aside in AID's General Participant Training Project II (497-0328) to fund long-term training for such candidates in science and technology fields.
- 2.15 Anticipated Results: The joint activities of the 3 areas described above are expected to result in specific policy and program recommendations for use by the Office of the Minister of State for Research and Technology, LIPI, and various agencies of the Indonesian Government. These recommendations are impossible to predict at this time but would likely include impact on the expenditure of funds for applied research, the type of specialized commodities needed to conduct applied technological and scientific research, and the types of specialized training required. The project would, in effect, give to the GOI a set of policy recommendations for incorporation into their research agenda. Reports will be produced for each substantive activity undertaken and staff summary reports or trip reports will be provided to the Office of the Minister and USAID, as appropriate. Also, NAS/NRC will issue quarterly reports to the Office of the Minister and to USAID which detail plans for the cooperative program in the upcoming quarter. These reports will be submitted in time to permit joint evaluation of recommended programs. In addition to specific joint recommendations regarding policy or program issues, the cooperative activities are expected to strengthen the capacity of Indonesia's scientific and technological agencies to contribute to solutions of national development problems, to create long-term linkages with U.S. scientific organizations and institutions, and to create a greater awareness, both in Indonesia and the United States, of the potential and actual role of science and technology in achieving social and economic development objectives.

III. COST ESTIMATE AND FINANCIAL PLAN

- 3.01 The cost estimate for this two-year effort is \$500,000 plus in-kind costs provided by the GOI. These costs will include salaries and indirect costs of NAS/NRC personnel; travel per diem, and other costs for consultants and for GOI personnel to U.S.; direct costs associated with reproducing reports, and other miscellaneous costs. The estimated dollar budget for this activity is included at Annex E. The GOI will furnish office space and meeting facilities, local transportation, secretarial assistance, reproduction facilities, and other miscellaneous services. It is anticipated that approximately forty (40) per cent of the funds will be spent in year one (FY 1986) of the contract while the remaining sixty (60) per cent will be spent in year two (FY 1987). Annex F provides the Summary Cost Estimate and Financial Plan and Annex G the Projected Expenditures by Fiscal Year.

12

IV. IMPLEMENTATION PLAN

- 4.01 This amendment will be carried out under an AID direct contract with NAS/NRC who will carry out its scope of work by working directly with the Office of the Minister of State for Research and Technology. For specific activities, for example renewable marine resources development, the NAS/NRC will work closely with the appropriate GOI counterpart agency, in this case LON. However, all activities will be coordinated and approved by the Office of the Minister of State for Research and Technology.
- 4.02 Approximately ten activities will be held during the two-year period. The activities will normally be held in Indonesia and will involve meetings by the joint overview committees, workshops, and advisory groups as well as follow-up visits by panelists and/or consultants. The project will be monitored by the leading members of the Indonesian scientific and technological establishment. The joint overview committee, consisting of senior members of MSRT, BPPT, LIPI, DRN and NCCB, will meet two or three times during the period as necessary to review past efforts, suggest needed follow-up and plan future activities. It will evaluate the specific activities in its area of concern, suggest training needed and potential institutions for either short or long-term training to the MSRT. In workshops, specialists selected by the NAS/NRC will meet with Indonesian counterparts to discuss and analyze a problem or set of issues and formulate joint conclusions and recommendations. Small advisory teams or consultants may be used occasionally when specific expertise is needed to help identify a problem or suggest a solution.
- 4.03 Program development and program follow-up trips by NAS/NRC staff or panelists will be necessary to plan, coordinate and support cooperative activities. Once the activities have begun, such travel will be coordinated with the major activities.
- 4.04 The NRC responsibility for cooperative activities will include, but not be limited to the following tasks: a) selection and briefing of NRC participants for all activities; b) assistance with international and domestic travel, tickets and travel expense reimbursement for NAS/NRC-sponsored participants and consultants; and c) arrangement of training, orientation and observation visits by Indonesian scientists and technologists selected by the Office of the Minister of State for Research and Technology with appropriate organizations or programs in the U.S. and third countries.

- 4.05 The contract for NAS/NRC's services will be executed by July 1985 and will run through July 1987. The first meetings among NAS/NRC, the MSRT and AID to refine further the workplan for the 2-year program and to lay the groundwork for the commencement of the first activity thereunder will take place in August 1985. NAS/NRC projects that the first workshop will commence sixty (60) days after contract execution or on or about 1 October 1985. Based on a projected ten (10) evenly distributed workshops over the life of the contract, there would be a workshop about every two months.
- 4.06 To expedite contracting subsequent to execution of the Loan Agreement Amendment, a draft PIO/T and a sole source waiver authorizing negotiation of a direct AID contract with NAS has been prepared and will be circulated for approval of the Mission Non-Competitive Review Board.

V. MONITORING AND EVALUATION PLAN

- 5.01 Based on the success of this cooperative program, the Mission may consider additional funding at some later date. USAID, thus, will monitor the progress and results of this project on the basis of three factors: 1) the relevance of the topic selected to Indonesian development problems; 2) what was the relevance of the recommendations and conclusions; 3) the extent to which the recommendations were acted upon. NAS/NRC will provide AID with a summary report of each activity specifically addressing these points. In addition, NAS/NRC will provide quarterly reports which detail plans and projected schedules for activities in the next quarter and the extent to which earlier recommendations were acted upon.



**REPUBLIC OF INDONESIA
NATIONAL DEVELOPMENT PLANNING AGENCY**

2, Jl. Taman Suropati - Jakarta - Indonesia
Phone : 336207

No. : 671 /D.I/3/1985

JAKARTA, March 13 , 1985

Encl. :

Mr. William P. Fuller
Director
USAID
c/o American Embassy
Jakarta

Re : PUSPIPTEK Energy Research Laboratory
(497-0333)

Dear Mr. Fuller,

On behalf of the Government of Indonesia, we hereby request an additional loan of Five Hundred Thousand United States Dollars (\$ 500,000), to fund a collaborative assistance effort between the Office of the Minister of State for Research and Technology (MSRT) and the National Academy of Science (NAS) under the PUSPIPTEK Energy Research Laboratory project.

This new loan amendment would increase the loan under the PUSPIPTEK Energy Research Laboratory project to \$ 11,750,000 over the 7-year life of project. The Government of Indonesia will provide an additional rupiah equivalent of \$ 295,000 or total contribution of \$ 4,295,000 in support of this project.

The project will be implemented by the Office of the Minister of State for Research and Technology (MSRT).

We look forward to your favourable consideration.



Sincerely yours,

M. Siregar

Muchtarudin Siregar
Deputy Chairman

Organization of Science and Technology Sector in Indonesia

I. Office of the Minister of State for Research and Technology (MSRT)

Overall coordination of national policy concerning research and technology and its application to national development is the responsibility of the MSRT. The MSRT was created in 1973 under Prof. Dr. Sumitro, a senior economic planner and policy advisor, who remains an influential advisor to President Soeharto. In 1978 Minister Habibie was appointed to replace Sumitro. Under Habibie the MSRT has emphasized applied research, technology for industrial development building the technological support structure needed for the nation's industrial development.

The MSRT has five separate functions:

- a. To advise the President on matters related to research and technology;
- b. To formulate government policy on research and technology in support of national development goals;
- c. To assure that all research and technology efforts are directed to national development needs;
- d. To coordinate all research and technology activities of all governmental agencies;
- e. To oversee the operations of six non-Departmental research and technology agencies.

The MSRT is assisted by the National Research Board (DRN) which is chaired by the Minister. The DRN is composed of members appointed by the President and representing government Departments, non-departmental government institutions and universities. The DRN is organized into five working groups: basic human needs; energy and natural resources; industry; security and defense; and social affairs, economics, culture and philosophy. A particularly important task of the DRN is to evaluate national research programs to assure effectiveness and adherence to national research policy and, based on that evaluation, to recommend necessary actions.

The MSRT has a small staff. The technical studies required by the MSRT are carried out by permanent and ad hoc committees formed by the MSRT with extensive participation of two non-Departmental research agencies: the Agency for the Assessment and Application of Technology (BPPT) and the Indonesia Institute of Sciences (LIPI).

The role of Minister Habibie in formulating science and technology policy is advanced by his leadership of various councils related to industrial development and his directionship of state industrial enterprises. In addition to his position as State Minister for Research and Technology, Habibie is:

- Chairman of BPPT
- Chairman of the Council for Strategic and Defense Industrial (Steel, Telecommunications, Aeronautics, Shipbuilding, Railway Rolling Stock, Explosives, Electronics, Defense)
- Chairman of BATAM Island Industrial Area Development Authority
- president of P.T. Nurtanio Aircraft Industry
- President of P.T. PAL Shipbuilding Industry
- President of P.T. PINDAD Armament Company.

II. Non-Departmental Research Agencies

Indonesia has six governmental technical bodies that report directly to the President, through the Minister of State for Research and Technology. These non-Departmental agencies are charged with basic research in physical and social sciences and providing specialized technical service to the government and general public. The Minister coordinates the operations of these agencies by reviewing, modifying and approving their program plans and budgets before they are submitted to BAPPENAS (Central Planning Board) for governmental budget review and approval.

A. The Agency for the Assessment and Application of Technology (BPPT)

BPPT is responsible for formulating general policies, coordinating programs and conducting selected activities in technology application and adaptation. Its tasks include fostering cooperation between government and private organizations in technology transfer, assessing technology for industrialization, evaluating all projects with significant technology content including imports of and transfer of technology from abroad and developing and operating laboratories.

BPPT was founded in 1978 by Habibie who has chaired it since its inception. In 1983 Habibie was formally named both Minister for Research and Technology and concurrently Chairman of BPPT. This action, at the beginning of the term of office of the present cabinet, elevated the status of BPPT.

BPPT is organized into six principal divisions: Basic and Applied Sciences; Technology Development; Industrial Analysis; Natural Resources; System Analysis; and Administration. In addition there are a number of Technical Operating Units which include five engineering and technology development laboratories that BPPT will operate at PUSPIPTK (the National Center for Research, Science and Technology): Materials Structures and Construction Techniques; Aerodynamics, Gas Dynamics and Vibration; Thermodynamics, Engines and Propulsion Systems; Energy Resources; and Technology Processing.

BPPT was formed from the Advanced Technology Division of the State Oil Company (PERTAMINA) in 1978. Habibie had headed this division before becoming Minister in that same year. BPPT is meant to be a think tank to advise and support Habibie in his many roles-- Minister, chairman of committees, director of industrial enterprises. Many of BPPT senior officials serve simultaneously as Assistant Minister or as senior officials of the several companies that Habibie heads.

B. The Indonesian Institute of Sciences (LIPI)

LIPI is responsible for supporting the work of the Office of the Minister of State for Research and Technology in developing science policy and for conducting scientific research and selected technology development. To these ends, LIPI provides the data base and the underlying analysis needed for policy-making and operates its own laboratories and research centers and the central technical documentation center.

LIPI was created in 1967 through a merger of several science and technology entities - the Council for Science of Indonesia (established in 1956) and the Institute for National Research (which had replaced the Ministry for National Research). LIPI is directed by a chairman. The Secretary is in charge of science policy analysis, international relations in science and encouragement of public understanding of science. Three Deputy Chairmen are responsible for operations in natural science, technology and social sciences.

The ten research centers are:

- 1) Biological Institute (Bogor) - includes four affiliate institutions (Botanic Gardens established in 1817, Herbarium, Laboratory for Botanical Research and Zoology Museum).

2) Institute of Oceanology (Jakarta and Ambon) - created in 1970 from the Institute of Marine Research (formerly part of the Biological Institute), its task is to conduct and coordinate work in such areas as marine biology, oceanography, marine geology and marine meteorology.

3) Institute of Instrumentation (Bandung and PUSPIPTEK) - assures adherence to international measurement standards, provides standards support to industry and other governmental agencies and develops specialized, precision instrumentation needed for industrialization.

4) Institute for Electronics (Bandung) - conducts research and develops technology for electronics, communications and electrical engineering.

5) Institute for Chemistry (Bandung) - conducts studies in basic and applied chemistry including the chemistry of food and chemical engineering.

6) Institute for Physics (Bandung) - conducts studies in applied physics and material sciences.

7) Institute for Metallurgy (Bandung) - conducts studies in extractive metallurgy, metal working, marine corrosion, refractory materials and industrial minerals.

8) Institute for Geology and Mining (Bandung) - gathers and preserves existing geologic data and conducts laboratory analysis.

9) Institute for Economic and Social Research (Jakarta) - conducts research on economic development, population and demography and social conditions.

10) Institute for Cultural Studies (Jakarta) - studies culture and values of Indonesian ethnic groups and culture of neighboring nations.

Partly due to its evolution from several other entities, LIPI represents Indonesia in a number of non-governmental international scientific organizations including ASEAN Committee on Science and Technology (COST), International Council of Scientific Unions (ICSU), International Union of Geodesy and Geophysics (UGGI). LIPI is responsible for reviewing and approving all requests from overseas for research to be conducted in Indonesia.

LIPI's staff totals 4000 of whom 280 are researchers; 1984 budget was \$7.1 million. Until the Office of the Minister of State for Research and Technology was created, LIPI played the lead role in all matters related to science and technology policy, coordination of national science and technology programs and the application of

science and technology to national development. With the establishment of the MSRT (1973) and BPPT (1978), many of LIPI's responsibilities were transferred to these agencies. Recently the Chairman of LIPI, Prof. A. Bachtiar Rifai, who had held the post since 1974, was replaced by the former Director General of Higher Education, Prof. Dr. Doddy A. Tisna Amidjaja.

C. The National Atomic Energy Agency (BATAN)

BATAN is responsible for the application of atomic energy to national development. This includes operation of research reactors; studies on the application of isotopes and radiation to industrial, agricultural and health uses; commercial production of radioisotopes; studies of reactor physics and design; planning for nuclear power programs.

BATAN was created in 1958 with extensive support from the US Atoms for Peace program. Its first research reactor (250 KW TRIGA) was constructed in Bandung in 1965. In 1971 this was upgraded to one MW. BATAN staff designed a second reactor in Yogyakarta using the original core from the Bandung reactor and components from a one MW reactor that were supplied by the USSR. (Work on the Russian reactor began during the Sukarno era but was not completed after the change of government in 1965.) The Yogyakarta reactor was completed in 1979. A third research reactor (30 MW German design) is under construction at PUSPIPTEK, scheduled for completion in 1987.

The Director General of BATAN is assisted by two Deputies: a Deputy for Application and Basic Science and a Deputy for Exploration and Technology. BATAN operates eight research centers in four sites: Jakarta, Bandung, Yogyakarta and PUSPIPTEK. The centers are in various stages of development. For example, the Centers for Application of Isotopes and for Nuclear Techniques are essentially "mature" while the Center for Dosimetry and Standards, which is responsible for public health and environmental protection aspects of nuclear energy, was created just over two years ago.

BATAN conducts a number of programs with the IAEA and UNDP and bilateral cooperative programs with Germany (reactor technology), France (exploration), Italy (engineering) and Japan (isotope application). The potential for cooperation with the U.S. is under consideration.

A major project currently underway is the development of BATAN's 30 MW Multipurpose Research Reactor and associated laboratories at the PUSPIPTEK research center. The reactor will be used for commercial production of isotopes, studies on fuel cell design and fabrication and waste management techniques. The expertise acquired in operating the complex will also be applied to future nuclear power programs which are envisioned for the 1995-2000 period. The BATAN complex at PUSPIPTEK, budgetted at \$290 million, is scheduled to be fully

21

operational in 1998. The complex will include the reactor (scheduled for operation in 1987) and a number of associated laboratories (e.g., radio metallurgy, engineering and safety, nuclear mechano - electronic laboratory, radioisotope preparation and processing, and fuel fabrication). BATAN will need a significant increase in manpower to operate the facility. An additional 600 people are planned for 1989. To meet this need, BATAN has developed cooperative agreements with three major universities and has funded training for 200 students. Additionally BATAN has established training programs under government-to-government agreements with France, Italy and Germany; commercial contracts for the construction of the facilities included training components and finally international and bilateral assistance programs will provide scholarships for overseas training.

BATAN is probably the most professional of the non-Department research agencies. Through the IAEA connection, many of the research activities are reported at international or regional conferences. BATAN actively encourages publication of the results of its research in its own journals and, where possible, international publications. Seminars are regularly held in-house to inform other staff of research results. Very importantly a salary supplement approximately equal to the base salary was incorporated into BATAN's basic regulation. As a result, BATAN administration and staff are the best paid in the scientific community, do not need to moonlight to the extent of other government officials, and can concentrate on their professional work.

At the beginning of 1984, the Director General of BATAN, Ir. Baiquini, was replaced by Ir. Djali Ahimsa. Ahimsa had directed the Bandung reactor center in the mid-1960s before joining the IAEA. He returned from the IAEA to assume his new post.

D. The National Space and Aviation Agency (LAPAN)

LAPAN stresses the application of space technology to problems of national development. Particular attention is given to resource inventory and evaluation, weather monitoring and communications. LAPAN operates the receiving stations for US and Japanese weather satellites and for LANDSAT resources satellites. LAPAN performs basic data processing, providing the results to other elements of the GOI (e.g., Meteorological Center and BAKOSURTANAL) for their use in producing maps and analysis. LAPAN researchers design, construct and launch meteorological sounding rockets and anticipate reaching altitudes of 90 to 300 km before 1990. LAPAN also operates a small wind tunnel for its vehicle design efforts.

E. The National Coordination Agency for Surveying and Mapping (BAKOSURTANAL)

BAKOSURTANAL is responsible for coordinating the mapping activities of government departments and establishing common technical standards. It produces some maps of its own. In particular, it has

modern facilities to analyze remote sensing data especially LANDSAT data. While BAKOSURTANAL is charged with providing maps to the general public, it has been difficult to obtain maps from them due to bureaucratic obstacles and GOI sensitivity about releasing mapping information because of potential military applications.

F. The Central Bureau of Statistics (BPS)

BPS was created in 1960 to conduct general statistical activities needed by the government, to coordinate statistical activities of all government agencies and to inform the public of the use of statistics and the results of statistical surveys.

III. The National Center for Research, Science and Technology (PUSPIPTEK)

PUSPIPTEK is not a non-Departmental agency itself but rather an administrative organization of certain laboratory operations of several of these agencies. It was proposed in the mid-1970's by the then Minister for Research Dr. Sumitro. Preliminary planning began in 1976. With Habibie's appointment as Minister of State for Research and Technology in 1978, the general plan was modified in important ways.

The original concept called for PUSPIPTEK to be a center for pure research. Under Habibie however, its objective became the national center for the applied sciences and technology development needed for Indonesia's national industrialization plans. Industrial support was to be the focus.

PUSPIPTEK occupies 350 ha at the village of Serpong, 25 km west of Jakarta. It will house eleven laboratories, central administrative facilities, conference facilities, guest houses and a residential area for staff members. The MSRT is responsible for overall project administration and for the construction of the physical infrastructure needed by this "science city". However the construction and equipping of the laboratories themselves and the training of the personnel is the responsibility of the several agencies who will operate the laboratories.

BPPT will operate five laboratories for engineering and technology development: Material Structures and Construction Techniques (in operation, German assistance); Aerodynamics, Gasdynamics and Vibration (in planning, Dutch assistance); Thermodynamics, Engines and Propulsion Systems (in planning, French assistance); Energy Resources (in planning, USAID assistance); Technology Processing (concept formulation stage, USG assistance requested and being considered though not by USAID).

23

LIPI will operate five laboratories for applied science: Calibration, Instrumentation and Metrology (a component of the Institute for Instrumentation, in operation, German assistance); Electronics (under construction, USG assistance requested); Physics (concept formulation stage); Chemistry (concept formulation stage); Metallurgy (in planning, discussion with the Germans on possible assistance).

BATAN will operate the reactor complex with its affiliated laboratories. This project has received German, US, Italian and French support through export credits, soft loans and grants.

PUSPIPTEK is intended to evolve into a world-class research center. Indonesia expects that researchers from developed countries and newly industrialized ones will undertake cooperative research with Indonesian colleagues at the complex. This type of cooperation with their ASEAN neighbors is of particular interest.

IV. Departmental Research and Development Programs

All line Departments of the government conduct their own mission-oriented research. The majority of agencies have established a departmental R and D agency in accordance with 1974 Presidential guidance. The remaining departments have retained the previous system of R and D dispersed throughout the various elements of the department.

The R and D plans and budgets for the line Departments is developed within the department and submitted as part of the Department's budget request to BAPPENAS. At that stage BAPPENAS can receive technical reviews and recommendations from the MSRT. In this way the MSRT exercises indirect influence over the R & D programs of the line Departments. This role will be enhanced as a result of the establishment of the National Research Board (see below).

The review process above contrasts with the direct control of the MSRT over the non-Departmental research agencies which submit their plans and budgets to the MSRT before they are forwarded to BAPPENAS for budget decisions.

Departments with R and D programs of particular interest are Agriculture, Health, Industry, Education and Mining and Energy.

-- The Agency for Agricultural R and D (AARD) was created in 1975 by merging the research activities conducted throughout the Department of Agriculture. AARD consists of several agriculture planning centers (Research Programming, Soil Research, Agro-economic Research, Agro-data Processing, Agricultural Quarantine and the National Library for Agricultural Sciences), several central research institutes (Food Crops, Fisheries, Animal Sciences and Industrial Crops) and ten area research complexes (three on Sumatra, two on Java, two on Sulawesi and three others).

In 1982 AARD staff totaled 5600 of whom 1400 were scientific staff. The distribution of academic degrees for the scientific staff was 67 PhD's, 251 Ms's, 260 BS's and 822 others. Currently about 360 researchers are studying for advanced degrees. The budget in 1982 totaled \$34 million.

-- The National Institute of Health Research and Development (NIHRD) operates six research centers within the Department of Health (Nutrition, Biomedical Research, Pharmaceutical Research, Health Ecology, Cancer Research and Radiology Development and Health Services R & D Center).

-- Department of Mining and Energy has no central research agency but rather conducts its research in the several operating arms of the Department. LEMIGAS is a training and research institute specializing in oil and natural gas. It provides laboratory analysis and field services in such areas as core analysis, paleontology, gravimetry surveys, basin and reservoir studies and microbiology. A recent reorganization of the geoscience elements of the Department combined units responsible for mineral resources, environmental geology, marine geology, volcanology and mineral technology.

-- Department of Education and Culture administers the government university system. The universities have been given three functions - teaching, research and services. The Department provides a small amount of research funds but the major share of funding for university research comes from the government or private sector for specific studies.

There is general agreement that linkages between universities research centers and industry need to be improved. Minister Habibie has emphasized cooperative agreements between universities and the state enterprises that he directs (specifically the aircraft and the ship-building companies). Under these arrangements, science and engineering faculty work part-time in industry, improving the practical content of the courses they teach.



The National Research Council (NRC) has well-established policies designed to ensure independent scientific quality and balance in its activities.

- o All proposed activities are reviewed and approved by the relevant Commission or Board, as well as the NRC Governing Board or its Executive Committee, prior to acceptance of funds, and formulated in such a way as to permit an unbiased assessment of the scientific evidence.
- o Members of all NRC committees and panels are approved and appointed by the Chairman of the National Research Council, upon recommendation of Commission and Board Chairmen, who are charged with responsibility for ensuring that the proposed slate of nominees is balanced with respect to both the necessary scientific expertise and perspectives on the problem to be studied.
- o Representatives of sponsoring organizations, formal or informal, are not permitted to serve as members of NRC committees. Although suggestions of prospective committee members are often sought from sponsoring agencies, appointment of members is the sole responsibility of the Chairman of the NRC.
- o Members of the NRC committees are required to disclose potential sources of bias, including financial interests, consulting relationships and previous public statements relevant to the scope of the committee's work.
- o Members of NRC committees normally receive no compensation, other than actual expenses, for their service.
- o All reports of NRC committees are reviewed by a group of experts other than the authoring committee, in accordance with procedures established by the Academies' Report Review Committee.

National Research Board Membership List

Number	Name	Position of membership in the National Research Board	Remark/Representative of
1	2	3	4
1.	Prof. Dr. Ing. B.J. Habibie	Chairman	Minister of State for Research & Technology, Chairman of the Agency for the Assessment and Application of Technology (BPPT)
2.	Prof. Dr. Doddy Achdiat Tisna Amidjaja	Vice Chairman/Member	Chairman of Indonesian Science Institute (LIPI)
3.	Prof. Dr. Sediono M.P. Tjondronegoro	Secretary/Member	Assistant to the Minister of State for Research & Technology for Formation Coordination and Policy Evaluation and National Prominent Programs (ASMEN V)
<u>Group I (Basic Human Needs)</u>			
4.	Prof. Dr. Ir. Sayogyo	Chairman/Member	Bogor Institute of Agriculture (IPB)
5.	Prof. Dr. A.A. Loedin	Vice Chairman/Member	Chief of Health Research & Development Agency, Ministry of Health
6.	Prof. Dr. F.G. Winarno	Secretary/Member	Expert to the Junior Minister of Food Production Development for Food Crops Post Harvest
7.	Prof. Ir. Triharso	Member	University of Gajah Mada (GAMA)
8.	Dr. dr. R.R.J. Sri Djokomoeljanto	Member	University of Diponegoro (UNDIP)
9.	Prof. dr. D. Ma'rifin Husin, M.Sc.	Member	University of Airlangga (UNAIR)
10.	Prof. Dr. Ibrahim Hasan, MBA	Member	Deputy for Procurement & Delivery, Agency for National Logistics Administration (BULOG)
11.	Dr. Masri Singarimbun	Member	University of Gajah Mada (GAMA)
12.	Prof. Ir. Hasan Poerbo	Member	Bandung Institute of Technology (ITB)
13.	Dr. Sugijanto Soegijoko	Member	Bandung Institute of Technology (ITB)
14.	Ir. Johan Silas	Member	Surabaya Institute of Technology (ITS)

1	2	3	4
15.	Prof. Dr. Ir. Achmad Muhsad Satari	Member	Deputy for Basic Science Development and Application, Agency for the Assessment and Application of Technology (BPPT)
16.	Dr. Setijati D. Sastrapradja	Member	Director of National Biological Institute, Indonesian Science Institute (LIPI)
17.	Prof. Dr. Aari Rasad, M.Sc.	Member	University of Indonesia
18.	Prof. Dr. Bintari Rukmono	Member	University of Indonesia
19.	Dr. Ibrahim Manwan	Member	Secretary of Agricultural Research & Development Agency, Ministry of Agriculture
20.	Prof. Dr. I. Gusti Bagus Teken	Member	Bogor Institute of Agriculture (IPB)
21.	Dr. Kartomo Wirosohardjo	Member	University of Indonesia
<u>Group II (Natural Resources & Energy)</u>			
22.	Prof. Dr. Ir. Achmad Baiquni	Chairman/Member	University of Gajah Mada (GAMA)
23.	Prof. Dr. Jacob Rais, M.Sc	Vice Chairman/Member	Chairman of BAKOSURTANAL
24.	Dr. Mohammad Ridwan, M.Sc	Secretary/Member	Deputy for Science Service Application National Atomic Energy Agency
25.	Ir. Djali Ahimsa	Member	Director General of National Atomic Energy Agency (PATAN)
26.	Prof. Dr. Didin Sastrapradja	Member	Deputy Chairman for Natural Sciences, Indonesian Science Institute
27.	Dr. Aprilani Soegiarto	Member	Director of National Oceanology Institute, Indonesian Science Institute
28.	Dr. Lolo M. Panggabean	Member	Director of Conversion Technology, Agency for the Assessment and Application of Technology (BPPT)
29.	Prof. Dr. Ir. Otto Soemarwoto	Member	University of Padjadjaran (UNPAD)
30.	Prof. Dr. J.A. Katili	Member	Director General of Geology and Mineral Resources, Ministry of Mines and Energy

1	2	3	4
31.	Prof. Dr. Ir. Henman Johannes	Member	University of Gajah Mada (GAMA)
<u>Group III (Industrialization)</u>			
32.	Dr. R.B. Suhartono	Chairman/Member	Chief of Industrial Research & Development Agency, Ministry of Industry
33.	Ir. Benito Kodijat	Vice Chairman/Member	Chairman of PUSPIPTEK Board of Directors
34.	Ir. Triaura Suhardi	Secretary/Member	Chief of Industrial Research Center Industrial Research & Development Agency, Ministry of Industry
35.	Ir. Herudi Kartowisastro	Member	Director of National Instrumentation Institute, Indonesian Science Institute
36.	Gandi, M.E.E.	Member	Project Manager of Standardization, Normalization and Industrial Production, Ministry of Industry
37.	Ir. Harsono Djuned Pusponegoro	Member	Deputy for Technology Development, BPPT
38.	Prof. Dr. Ir. Harsono Wiryo Sumarto	Member	Bandung Institute of Technology (ITB)
39.	Ir. A. Suleman Wiriadjaja	Member	Deputy for Systems Analysis, BPPT
40.	Ir. Rahandi Ramelan	Member	Deputy for Industrial Assessment, BPPT
<u>Group IV (Defense & Security)</u>			
41.	Brig. General Hardijono	Chairman/Member	Chief of BPPIT, Ministry of Defense & Security
42.	Brig. General R. Ngandani	Vice Chairman/Member	Chief of Military Research & Development Center (Puslitbang)
43.	Brig. General Dirham	Secretary/Member	Chief of Army Dislitbang
44.	Rear Admiral Ir. Wiyoto Sukarso	Member	Chief of Navy Dislitbang
45.	1st Marshall Subagio	Member	Chief of Air Force Dislitbang
46.	Colonel Drs. Duna Daeng Ditawiria, SH	Member	Chief of Police Dislitbang

10

1	2	3	4
Group V (Social, Economic, Philosophy & Law)			
47.	Prof. Dr. Sukadji Ranuwihardjo	Chairman/Member	Director General of Higher Education, Ministry of Education & Culture
48.	Prof. Dr. Sediono M.P. Tjoudronegoro	Deputy Chairman/Member	Assistant to the Minister of State for Formulation Coordination and Policy Evaluation and National Prominent Programs (ASMEN V)
49.	Dr. Suharso, MA	Secretary/Member	Director of LEKNAS, LIPI
50.	Prof. Dr. Koentjaraningrat	Member	University of Indonesia
51.	Dr. Nicodemus Lulu Kana	Member	University of Satyawacana
52.	Dr. Boediono	Member	University of Gajah Mada (GAMA)
53.	Dr. M. Ali Basyah Amin, MA	Member	University of Syah Kuala (UNSYAH)
54.	Dr. Soerjanto Poespowardojo	Member	Expert to the Junior Minister/Cabinet Secretaru
55.	Dr. Astrid S. Susanto Sunario	Member	Chief of Bureau for Social Communication and Science, BAPPENAS
56.	Prof. Dr. Suhadi Mangkusuwondo	Member	Chief of Trading Research & Development Agency, Ministry of Trade/ University of Indonesia
57.	Prof. Dr. H.A. Mukti Ali	Member	State Islamic Institute Sunan Kalijogo
58.	Prof. Dr. Soerjono Soekanto, SH, MA	Member	University of Indonesia
59.	Prof. Dr. Setijadi	Member	Rector of the Open University
60.	Dr. Koento Wibisono Siswomihardjo	Member	University of Gajah Mada (GAMA)
61.	Dr. Muljanto Sumardi, MA	Member	Ministry of Religious Affairs
62.	Prof. Dr. Sartono Kartodirdjo	Member	University of Gajah Mada (GAMA)
63.	Prof. Dr. Satjipto Rahardjo, SH	Member	University of Diponegoro
64.	Dr. Mohamad Aradjad Anwar	Member	University of Indonesia

Translated by Philip B. Tjakranata:pl

Doc. 3973 p.13

20

ESTIMATED DOLLAR BUDGET

I. <u>Contract</u>		
A. <u>Salaries and Wages</u>		
1. Professional		\$ 72,488
2. Secretarial		<u>\$ 20,808</u>
	Sub Total A	\$ 93,296
B. <u>Fringe Benefits</u>		
Rate @ 58.6%		\$ <u>21,458</u>
	Sub Total B	\$ 21,458
C. <u>Overhead</u>		
Rate @ 58.6%		\$ <u>67,246</u>
	Sub Total C	\$ 67,246
D. <u>Consultants</u>		
1. 40 days @ \$250/day		\$ 10,000
2. 40 days @ \$130/day		<u>\$ 5,200</u>
	Sub Total D	\$ 15,200
E. <u>Transportation and Travel</u>		
1. <u>Travel in the U.S.</u>		
2 committees meetings on Biotechnology and Marine Science - 3 persons each trip @ \$595/person/trip		\$ 3,750
2. <u>International</u>		
a. Committees (U.S. - Jakarta)		
Biotechnology 2 x 3 persons @ \$2,600		\$ 15,600
Marine Science 2 x 3 persons @ \$2,600		\$ 15,600
Meetings 3 x 5 persons @ \$2,600		\$ 39,000
Panel Follow up 2 persons @ \$2,600		\$ 5,200
b. Consultant		
2 x trips x 1 person @ \$3,000		\$ 6,000

c. Staff (U.S. -Jakarta)		
Prog. Dev. 6 x 1 person @ \$2,600		\$ 15,600
3. <u>Perdiem</u>		
444 days @ \$109/day		\$ 48,396
4. <u>Insurance</u>		\$ <u>7,900</u>
	Sub Total E	\$156,866
F. <u>Other Direct Costs</u>		
Reproduction and duplication, telephone and telegraph, postage and delivery, Word Processing equipment rental, books, office supplies		\$ <u>52,070</u>
	Sub Total F	\$ 52,070
G. <u>General and Administrative Costs</u>		
Rate @ 10.8%		\$ <u>43,864</u>
	Sub Total G	\$ 43,864
	Total for NAS/NRC Contract	\$450,000 -----
II. GOI Travel		\$ <u>50,000</u>
	Grand Total	\$500,000 -----

SUMMARY COST ESTIMATE AND FINANCIAL PLAN
(US\$000)

Source	AID		Host Country		Total
	FX	LC	FX	LC	
Technical Assistance	6,275*			295**	6,570
Training	1,765			290	2,055
Technology and Systems Procurement	2,015			860	2,875
Commodities	2,195			200	2,395
Construction				2,650	2,650
TOTAL:	12,250			4,295	16,545

* Includes \$500,000 in grant funds.

** Estimated GOI budget to support the National Academy of Sciences activity.

PROJECTION OF EXPENDITURES BY FISCAL YEAR
(US\$000)

Fiscal Year	AID		Host Country	Total
	Loan	Grant		
thru 1984	150	110	600	860
1985	650	250	730	1,630
1986	2,750	140	1,150	4,040
1987	3,700		1,115	4,815
1988	3,000		500	3,000
1989	1,500		200	1,700
TOTAL:	11,750	500	4,295	16,545

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 82 to FY 89
Total U.S. Funding: \$12,250,000
Date Prepared: March 12, 1985

Project Title & No.: PUSPIPTEK Energy Research Laboratory Project No. 497-0333;
Amendment No. 1, NAS/GOI Collaboration

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: to maximize the efficient formulation of science and technology programs for Indonesia to achieve social and economic development objectives.</p>	<p>Identifiable products and procedures adapted by the Indonesian agricultural and industrial sectors.</p>	<p>GOI reports, project monitoring.</p>	<p>1) GOI funding available for project implementation; 2) continued personnel development of the Indonesian applied science and technology sector; 3) continued development of macro-economic policies conducive to the transfer of research results to the industrial and agricultural sectors.</p>
<p>Project Purpose: to facilitate the capacity of Indonesian's scientific & technology agencies to contribute to solutions of national development problems by creating long-term linkages with U.S. scientific organizations and institutions which help translate overall scientific goals into workable policies and programs.</p>	<p>1) a signed contract between USAID and the National Academy of Sciences to provide specialized technical assistance to the GOI; 2) specific activities being carried out under the contract.</p>	<p>Workshop and committee meeting results and minutes.</p>	<p>1) a quick response from the NAS for specific GOI requests; 2) DRN adequately formulates requests relevant to the context of Indonesian development and provides the requisite amount of counterpart attention.</p>
<p>Project Output: a series of concrete policy and research recommendations adaptable by the Indonesian scientific and technology establishment in the areas of bio-technology, renewable marine resources development, and science and technology management and policy.</p>	<p>Magnitude of Outputs: specific policy & program recommendations for use by the Office of the Minister of State for Research and Technology, LIPI, and various agencies of the GOI, including specific recommendations for the expenditure of funds for applied research, the types of specialized equipment needed to conduct applied technological and scientific research and the precise definition of specialized training required.</p>	<p>1) NAS reports; 2) Evidence of adaptations by the Indonesian scientific establishment of specific NAS policy and research recommendations.</p>	<p>1) DRN and the rest of the Indonesian establishment is responsive to recommendations; 2) GOI personnel attending workshops and other activities are sufficiently senior to implement decisions.</p>
<p>Project Inputs: 1) 10 workshops with reports under the \$450,000 contract with the NAS; 2) \$50,000 for GOI travel to the United States.</p>			

Handwritten initials/signature