CORPORATE PLAN 1991-1995

NATURAL RESOURCES, ENERGY & SCIENCE AUTHORITY OF SRI LANKA

NA-18

C O N T E N T S

CHAPTER 1

INTRODUCTION

Background

The Natural Resources, Energy and Science Authority of Sri Lanka (NARESA) is the legal successor to the National Science Council of Sri Lanka (NSC).

As early as 1948, the Government accepted a proposal of the Ceylon Association for the Advancement of Science (CAAS) for the establishment of an official organization for co-ordinating research at a national level. However, implementation of this proposal had to await a further 20 years.

In the meantime, the CAAS continued to function as the central organization for planning and directing of scientific research and advising the Government on policies relating to science and scientific research. The CAAS, as a voluntary organization, could not achieve the desired progress.

In 1968 the National Science Council was set-up under the Ministry of Scientific Research and Housing by Act No. 9 of 1968. This Act was replaced by the NSC Law No.36 of 1975 and later amended in 1979.

In 1981 major changes were planned which included the widening of the scope of activities of the organization to encompass scientific work relating to natural resources and energy. With these changes, the NSC ACt was repealed, and in its place the Natural Resources, Energy and Science Authority (NARESA) was created by Act No: 78 of 1981. This new organization was then brought under the umbrella of His Excellency the President.

In January 1989 with the creation of a State Ministry for Science and Technology, under the line Ministry of Higher Education Science and Technology, NARESA was transferred to this new State Ministry. Subsequently in March 1990, with the re-allocation of Ministrial functions, NARESA was placed under the Project Ministry for Science and Technology under the line Ministry of Industries, Science and Technology.

Objectives:

The main objectives of NARESA are:

(a) to advise the Minister regarding:

(i) measures for the promotion and development of national self-reliance in the application of science and technology for the benefit of the people of Sri Lanka;

(ii) policies concerning science, natural resources development and energy;

(b) to initiate and sponsor research in these areas;

(c) to collect and disseminate information, publish reports, periodicals and papers relating to natural resources;

(d) to study and report on matters of importance regarding science and technology, natural resources and energy;

(e) to establish and maintain liaison with individuals, associations or institutions in Sri Lanka and in other countries regarding matters relating to the development of natural resources and conservation and development of energy and concerning science and technology;

Goals and Targets:

The outlook of NARESA's stated objectives though broad and open-ended are articulated towards a series of long term goals and targets which may be briefly set out as follows:

1. To create an awareness among the people of Sri Lanka of the benefits of science and technology, and ensure the diffusion of the fruits of scientific and technological research to the roots of our society, for the betterment of its standards of living.

2. To enhance research capability and establish a pool of qualified and well trained research scientists in the country in all fields and disciplines (including social sciences), whose services and expertise will be in demand for academic, fundamental, applied and problem-oriented scientific research.

3. To establish a reportoire of demand-oriented science and technology policy related resource material for planning and management of science, technology and science education.

4. To create a stronger and critical awareness among the national planning hierarchy of the prime importance of scientific and technological considerations in development planning.

5. To evolve a common dialogue with planners and policy makers to facilitate the integration of science and technology in national planning.

6. To transform the science and technology library network into a user-preference on-line national network of Information Centres.

In order to achieve these long term goals and targets it is proposed that,

(a) a publicity/public relations unit supported with a permanent exhibition and resource material be established.

(b) the research grants scheme be widened to enable promotion and establishment of multi-disciplinary research teams for user-oriented as well as high quality expedient basic and academic research. Towards this end NARESA will continue to seek increasing levels of financial assistance from national as well as from foreign donor agencies.

(c) a science and technology policy research cell be established for data collection, surveilance and policy analysis work. Apart from supply and demand-oriented policy research, this cell will evolve Management Information Systems (MIS) for scientific research, to facilitate a link up with planners and policy makers.

(d) NARESA's role as the nerve centre for S & T information dissemination be, restructured and strengthened to facilitate the establishment of a national network of Information Centres. A National Resources Information Centre will be established at NARESA as an extension of the Scientific and Technical Information Centre, which would provide a mechanism for the development and dissemination of information on policies for sustainable use of resources. The Centre is expected to maintain links with information centres at regional and international levels.

Organization:

The Governing Board of NARESA consists of the Director-General (who functions as the Chairman) and ten members appointed by the Minister. The Director-General functions as the Chief Executive of the Authority. The Act makes provision for the appointment of Working Committees comprising experts in the different areas of science and technology, natural resources and energy.

At present there are 10 Working Committees which cover the following fields:

- Energy
- Natural Resources
- Physical and Engineering Sciences
- Chemical Sciences
- Biological Sciences
- Medical and Veterinary Sciences
- Agriculture and Animal Husbandry
- Science Education
- Social Sciences
- Science Information

Two Technical Committees on

- Genetic Resources
- Aquatic Weeds

Four Advisory Committee on :

- Research on Indigenous Water Buffalo
- Research on Coastal Ecology
- Zoological Survey of Sri Lanka
- Botanical Survey of Sri Lanka

In addition NARESA co-ordinate the activities of the National Committees for Man and the Biosphere and Mangrove Programme. These expert committees constitute the main advisory arms of the Authority, not only in relation to recommendation of research grants, but also in respect of policies and priorities for research in the respective fields.

Activities:

(A) NARESA Research Grants Scheme:

In 1970, the National Science Council, initiated one of its most ambitious schemes, to award grants for creative, curiosity oriented scientific research. It was indeed the first time that any such scheme covering all fields of science was initiated by any institution in Sri Lanka. This research grant scheme continued to function in its original form under NARESA which replaced the NSC in 1982.

Under this scheme grants for research in the fields of agriculture, biology, chemistry, medicine & veterinary sciences, physical and engineering sciences, and social sciences are awarded annually. Applications for grants are invited by advertisement in national news-papers annually during the month of June for grants to be awarded from the 1st of January the following year. Applications received are screened and evaluated by specialist committees appointed for each of the above subject areas. These committees which are constituted as statutory working committees, function for a period of 2 years.

The grants awarded are monitored regularly through progress reports submitted at half-yearly intervals and through progress review seminars. Once the research programme is completed, a final report is submitted by the grantee, which is evaluated by the specialist panel. The evaluation takes into account any postgraduate degrees awarded to personnel associated with the project and also the intrinsic scientific contributions made towards widening the horizons of knowledge and/or application of science and technology for development.

In awarding research grants regularly the National Science Council and its successor the Natural Resources, Energy and Science Authority had as their main objectives, (a) providing opportunities for Sri Lankan scientists to engage in both applied and curiosity-oriented "expedient basic research" in any field of science, (b) the enhancement of research capability, both of the recipient and of his laboratory, (c) aproviding opportunities for promising young scientists to obtain postgraduate degrees and be in productive employment and (d) offering an opportunity for foreign trained Sri Lankan scientists to re-orient towards the national research needs of the country. Accordingly, in evaluating the research output, consideration has to be given to the extent to which the primary objectives have been achieved. It has to be commented that although this organisation's financial

contribution amounts to less than 5 percent of the total research budget in the country, it is the key scientific organisation which supports curiosity-oriented research in all scientific disciplines, including social sciences. This grant awarding scheme with its non-restrictive and open-ended policy, has thus been a strong and positive path-finder on the research orientation of the country's viable research community.

The data presented in figure I illustrates the manner in which funds have been allocated to the major subject areas over a period of 20 years (1970-1990). It is to be noted that despite the fact that the government's grant to the organization for scientific research had remained virtually constant over the period, and hence substantially declined in value in real terms, it has been possible to maintain the momentum in research activity over the years. Chemical Sciences, medical and veterinary sciences and agricultural sciences continued to make the biggest demand on funds. Table I summarizes the status of research grants awarded during 1970-1990. No attempt has been made to deflate the expenditure to constant prices as comparisons are made between subject areas over the identical period. It is to be noted that although social sciences have received the highest number of grants (25 percent), this subject area needed the least amount of funding (4% of total). The hard sciences, especially chemical sciences (with 27.2%), made the greatest demand on funds, mainly due to the need for equipment and costly consumables. It is significant that agricultural sciences have seen relatively more successes, in terms of completed grants, and also had on an average, received bigger allocations per grant. The overall average success rate of 51 percent for 1033 research grants awarded by this organization over 20 years, can be considered most gratifying by any standard, since a success rate of 40 percent is generally considered highly fruitful.

A significant feature of the research grants scheme is its productivity in terms of postgraduate degrees and scientific publications. This is reflected in the data summarized in Table 2. In all 199 Masters degrees and 21 doctoral degrees were produced during its 20 years period of research sponsorship.

The overall cost of a postgraduate degree (row 8 of Table 2) has been computed on the basis of the expenditure involved in those grants which resulted in a postgraduate degree during the period 1970-1990. The amounts which range from around Rs.37,000 (US$ 925) to about Rs. 54,000 (US$ 1350), for medical and hard sciences, includes the expenditure on equipment, consumables, travel, living allowances of the research assistants and any other labour costs, but does not

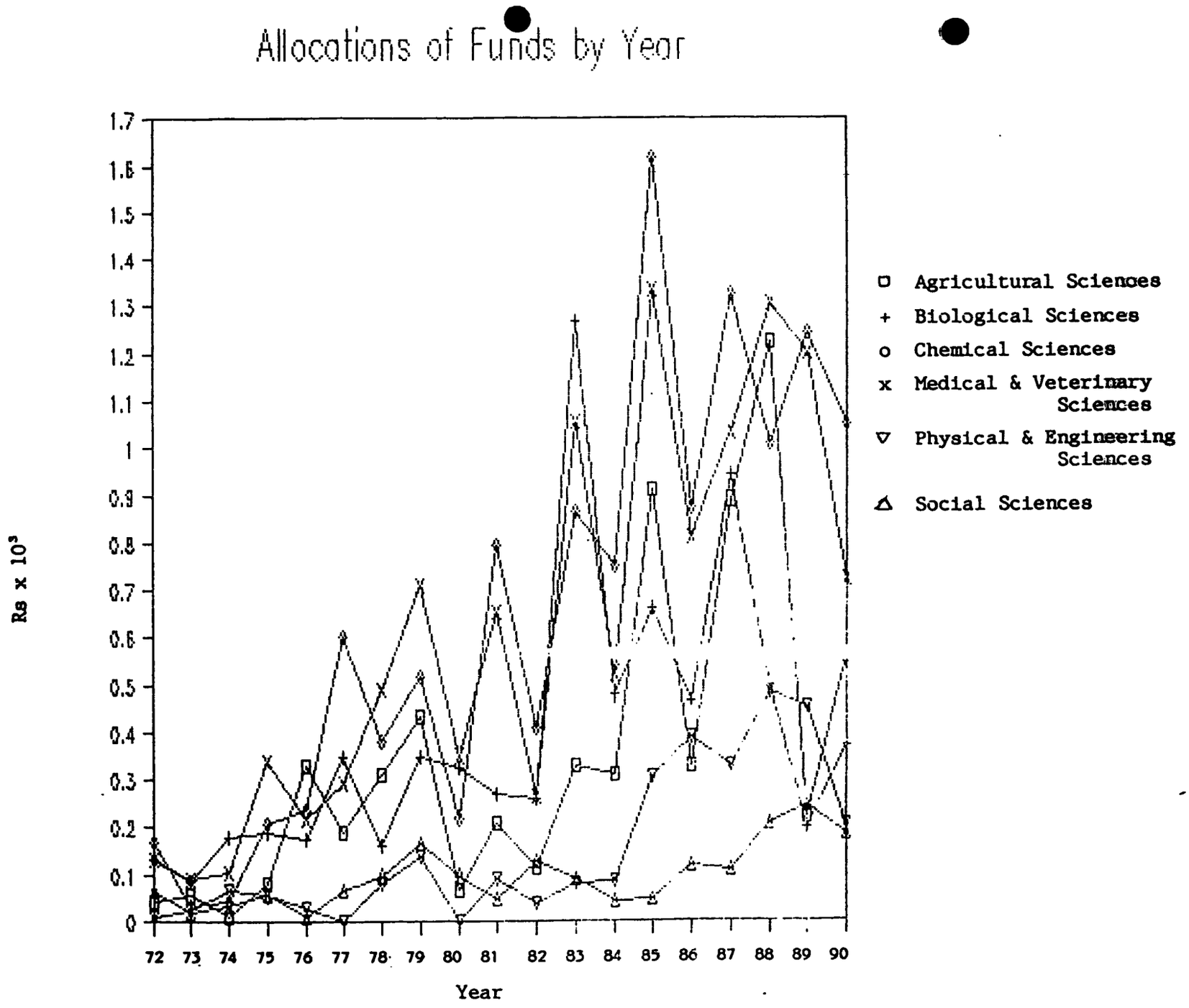

Figure 1 - Allocation of Funds for Scientific Research

Table I:

SUMMARY INFORMATION ON THE NARESA RESEARCH GRANTS SCHEME

1970-1990

Subject Area	Total No.of grants alloca-ted	As per cent total No.of grants	Total sum allo-cated Rs.($x10^3$)	As per cent of total for	Average alloca tion per grant Rs.($x10^3$)	Total No.of comple ted	Per cen tage of grants
1. Agriculture & Animal husbandry	94	9.1	9137	21	97.2	62	65.9
2. Biological Sciences	182	17.6	8845	20.4	48.6	105	57.6
3. Chemical Sciences	190	18.4	11830	27.2	62.2	105	55.2
4. Medical & Vet Sciences	241	23.3	8844	20.4	36.7	104	43.1
5. Physical & Eng. Sci.	70	6.8	3066	7.0	43.8	34	48.5
6. Social Sciences	256	24.8	1746	4	6.8	98	38.2
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Table 2: Output of the Research Grants scheme in terms of postgraduate degrees and scientific publications 1970-1990

Parameters	Subject areas: Agriculture & Animal husbandry	Biological sciences	Chemical Sciences	Medical & Vet Sc.	Phy. & Eng. Sci.	Social Sci.
1. Number of completed grants	62	105	105	104	34	98
2. Total expenditure ($Rs.x10^3$)	3777	4102	7848	3764	1625	954
3. Expenditure on equipment ($Rs.x10^3$)	471	238	637	313	230	0
4. Percentage spent on equipment	12.5	5.8	8.1	8.3	14.1	0
5. Master's degree	12	47	45	27	13	55
6. Doctorates	01	03	06	07	02	02
7. P.G. degrees as a percentage of the no.of grants	21	47.6	48.5	32.7	44	58

Subject areas / Parameters	Aggriculture & Animal husbandry	Biological sciences	Chemical Sciences	Medical & Vet Sc.	Phy. & Eng. Sci.	Social Sci.
8. Overall cost of a post-graduate degree	53728	39270	48908	36928	47937	4378
9. Publications in international journals	07	17	77	19	27	3
10. Publications in local journals	19	27	42	34	08	33
11. Publications as per centage of the no. of completed grants	42	42	113	51	103	37
12. Mean overall cost/ publication	33485	21062	17556	21309	9981	6484
13. Scientific comunications	24	67	178	51	19	8

include the costs of bench space or payments to supervisors. In social sciences the postgraduate degrees awarded were mostly in the field of education, and since the research grantee himself was the receipient of the degree, the expenditure involved was only in respect of travel and stationery. These figures show at least in terms of human resource development, how profitable the research grants scheme had been. Its significance becomes more evident when one surveys the positions occupied by some of these beneficiaries, and contributions made by them in key public sector institutions, as well as in the academe.

The research grants scheme had also resulted in the publication of 313 scientific papers of which a little under 50 percent were in internationally recognized refereed journals. This is indeed a tribute to the ingenuity and quality for our scientific personnel, who when offered the opportunity and facilities have been able to display their true capabilities. It is significant to note that 51 percent of scientific papers contributed to international journals and 26 percent of the papers contributed to local journals came from chemical science grants. A study of the type of research carried out in the different disciplines have shown that, while in chemical science, the major effort has been in the direction of basic type of research, relating mainly to geochemistry and natural products chemistry, in the other fields, it has been mainly of an applied nature. This could also mean a better access to the prestigious journals in the fields of chemistry. Possibly researchers in the field of chemical sciences desired greater recognition and visibility, and infact were successful in receiving the patronage of international journals.

It has to be noted that what has been presented here reflects only funds allocated to NARESA from the national budget. Over the past 10-12 years NARESA has been receiving increasingly significant amounts of funds from international agencies such as SAREC, CIDA, USAID, and AIDAB for sponsored research. This is again a reflection of the acceptance and satisfaction of NARESA's research grants scheme by international funding agencies.

Research sponsorship is one of the major functions of NARESA. As pointed out earlier the objective of NARESA's research sponsorship scheme is multi-dimensional and not confined to be totally object-oriented. In this respect the performances have been more than what could be expected, especially considering the enormous constraints in trying to over-come delays caused by bureaucratic administrative and financial procedures, which tends to hinder the type of open-ended scientific work that NARESA has supported, and which is most eagerly sought by those patronising the scheme.

And now what of the outcome of research? In the past, when a research project is completed and a final report has been submitted, as a matter of policy, these reports were not released for two year, unless other unless otherwise requested by the

researcher. In fact, some researchers have refused to submit comprehensive accounts of their research findings, because of the fear that the information may be reproduced by unscrupulous persons for their personal benefit. Such incidents have in fact occured in the past, as there were no guarantees for protection of such material. However, with certain types of precautions, taken by NARESA, the research findings are now made available to genuine users which include government departments and institutions, with due acknowledgement to the authors.

(B) **Research Grants Provided by External Agencies:**

SAREC Projects: The Swedish Agency for Research Co-operation with Developing Countries (SAREC) has been providing funds for research through the NSC since 1977. These funds have been used for building up the research capability of selected institutions in certain specified areas. The first three grants were given to the Central Agricultural Research Institute of Gannoruwa for obtaining equipment for its plant virology unit; to the University of Colombo for the purchase of equipment for its Environmental Studies section; and to the Peradeniya Medical Faculty and the MRI for strengthening their capability in the area of research on liver diseases. Subsequently, SAREC grants were used for the establishment of two Glass Blowing Units at the University of Peradeniya and the University of Moratuwa, and for the establishment of a repair workshop for electronic scientific equipment at the University of Peradeniya, Faculty of Engineering. At present, two major programmes of research are being supported on SAREC grants; one for developing the indigenous buffalo of Sri Lanka and the other on Coastal Ecology. Both these research programmes are multi-disciplinary in nature and implemented by multi-institutional research teams, co-ordinated and monitored by NARESA.

USAID Project: Recently an agreement was signed with US AID under which NARESA was granted funds for 3 research projects in the field of agriculture. The projects are being carried out by research workers at the Faculty of Agriculture, Peradeniya, and the Department of Agriculture.

CIDA Project: The Canadian International Development Agency provides funds through NARESA for research on the application of muriate of potash fertilizer to agriculture crops in Sri Lanka.

(C) Special Studies:

NARESA is called upon from time to time to study and report on matters of national importance in relation to various aspects of science and technology. Three such studies made by NARESA are a study on the proposal to use atomic energy for the generation of electric power, a pre feasibility study on Ocean Thermal Energy Conversion, and a study on national computer policy in Sri Lanka. Such studies are carried out by committees of experts selected from different institutions in the Island.

(D) Science Policy Research

NARESA has encouraged and promoted science policy analysis studies among its professional scientists. As a consequence, several studies have been undertaken by its senior scientific staff. Studies undertaken or completed are surveys of scientific and technical manpower in Sri Lanka, financial resources devoted to R and D, constraints to R & D, technology assessment, and biomas evaluation (Refer annex).

(E) Information Centre:

The NSC established an Information Centre in 1977, and for five years received financial support from UNDP for strengthening it. At present a number of activities are being undertaken by this Centre. These include information dissemination among scientists in selected fields, assisting scientists in retrieving information from both local and foreign sources on any field in science and technology, publishing lists of acquisitions by the main scientific libraries, producing an index of scientific publications in Sri Lanka, and carrying out training courses for library personnel and research scientists.

Audio-visual services:

The following Audio-visual equipment are available at NARESA on hire:-

Overhead projector, Video player, [1] Cassette recorder[1], Slide projector, Microfiche readers and 16 mm film projector.

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[1]Loan to the Project Ministry of Science and Technology

Computer:

A Wang 2200 MVP Computer system has been installed to improve the existing scientific information and documentation services provided by NARESA. Facilities for the utilization of computerized information products and services are available to other scientific institutions at a reasonable rate.

Microfiche Services:

NARESA offers microfiche services to other institutions for a reasonable charge. Facilities are available for the conversion of books, periodicals etc., into microfiche; duplication of microfiche, and the production of paper copies from microfiche. Microfiche readers too, are available to users, at NARESA.

Offset Printing:

Offset printing facilities are provided at NARESA for printing its own publications and also to provide services to other scientific institutions.

Conference Hall:

NARESA has built air conditioned conference hall which could be hired out to other scientific institutions for holding seminars and workshops. Fifty persons could be accommodated within the hall with desks and chairs, and audio-visual equipment could be provided if necessary.

(F) Publications:

The regular publications of NARESA are as follows:

Journal of the National Science Council (biannual) - covering all natural and applied sciences

Sri lanka Journal of Social Sciences (biannual)

Vidurawa (quarterly)-
a science bulletin for popular science reading in Sinhala, Tamil and English

Science Investigations -
a journal for publishing the work of science students and science teachers in secondary schools

Science Education series -
each number in the series covers a selected topic of scientific interest, and published in Sinhala, Tamil and English.

(G) International Liaison in Science and Technology:

NARESA functions as the national focal point in relation to many international activities in S & T. On behalf of the scientific community of Sri Lanka, it holds membership in the Commonwealth Science Council (CSC), International Council for Scientific Union (ICSU), International Foundation for Science (IFS), Third World Academy of Sciences (TWAS) and Association for Science Co-operation in Asia, (ASCA), and the Association of Asian Social Science Research Councils (AASSREC)

(H) Scheme of Awards for Outstanding Achievements in Science and Technology

A scheme for rewarding scientists for outstanding research work was initiated in 1983. Under this scheme two awards are made every three years: The Presidents Award for Scientific Achievements and the NARESA Award for Scientific Achievements. In addition, since 1986 a scheme of merit awards for research carried-out on NARESA grants, are made every two years for the different disciplines.

(I) NARESA's Role as a National Co-ordinator

NARESA is the national coordinator for a number of regional and international programmes. Some of these are:

The Man and the Biosphere (MAB) programme of UNESCO through the National Man and the Biosphere Committee

The Mangrove Research Programme of UNESCO, through the National Mangrove Committee.

CHAPTER 2

RESOURCES

1. Buildings and Land

NARESA is housed in a three storeyed building with a two storeyed annex. The total floor area of the buildings is about 14,500 sq. ft. of which 4500 sq ft. from the main building are now occupied by the Ministry of Science and Technology. The extent of the land in which the building is located is about 1 acre situated in Colombo 7.

Since it was felt that lack of space in office is a constraint to cope efficiently with the volume of rapidly increasing work in NARESA, it was proposed to put-up a new building, and initial activities in this connection were carried out in 1985/86 by drawing plans etc., with the assistance of ICTAD. However, the construction work could not be started due to a shortage of funds. In the meantime in April 1990, the entire 1st floor of the building which covers an area of about 4,500 sq. ft. was taken over by the Project Ministry of Science & Technology for it's office use. At the time of taking over, NARESA was advised to take immediate steps for the construction of the proposed building.

Accordingly the Authority after carefully considering the proposed project for setting up the Natural Resources Information Centre funded by US AID under NAREP, and the need for more floor space for NARESA, decided to put up a 3 storey building as the Information Centre, together with 2 storey block adjoining the building now occupied by the Scientific Affairs Section of NARESA. It is proposed that US AID project funds and funds from NARESA's deposit account with the General Treasury, would be utilizsed for this construction project. Both buildings are estimated to cost around Rs. 11 million,and it is planned to complete the building construction project by end of 1992.

Construction work of the project would commence no sooner the approval of the Development Secretaries and the General Treasury are obtained by the Project Ministry of Science and Technology, for which a request has already been made.

2. Manpower and Management Skills

NARESA comprises of four main divisions: Scientific Affairs, Scientific and Technical Information, Accounts and Administration. All divisions have been seriously handicapped with an acute shortage of staff. The present staff strength is only about 60 per cent of its approved cadre, but its output is estimated to be over 75 per cent. This higher out turn against the backdrop of a staff shortage is attributed to, (a) the excellent staff relations, especially among the professionals, and (b) the dedication towards completion of a targetted job through continuous work after normal office hours, and working during holidays.

The Scientific Affairs Division currently has a professional staff of one Deputy Director General, one Director, two Assistant Directors and 9 Scientific Officers. Nine professionals are with postgraduate qualifications while two others are on study leave preparing for Masters degrees. Except for four members of the senior management (inclusive of the Director General), others have not had the opportunity of any training abroad.

In the Scientific and Technical Information Division, the three top posts are vacant, and presently a senior officer of the Scientific Affairs Division functions as Acting Director Information. There is one documentalist and two library assistants. The Information Division also has under its wings, the printing section. The Printing Superintendent's post is vacant. The other technical staff comprises of a Litho Machine Operator, Camera Operator/Plate Maker, Litho Artist, Off-set Machine Operator and a Book Binder.

The Accounts Division has three accountants, and a supporting staff of accounts clerks, book keepers, shroff, store keeper and steno-typists.

The Administration Division has an Administrative Secretary, an Assistant Administrative Secretary, a Staff Assistant and a supporting staff of clerks, steno-typists, telephone operator/receptionist, translator, drivers and minor staff.

The manpower needs of the institution based on the existing cadre are summarized in Table 3.

Table 3: **Manpower Requirements for 1991 to 1995**

Post	1991	1992	1993	1994	1995
Director General	01	01	01	01	01
Dy. Director General	01	01	01	01	01
Scientific Division					
Director (Scientific Affairs)	02	02	03	03	04
Asst. Director (Scientific Affairs)	04	04	04	04	04
Scientific Officer	14	16	16	18	18
Confidential Secretary	03	03	03	03	03
Steno/Typist	11	11	12	12	12
Information Division					
Director (Information)	01	01	01	01	01
Asst. Director (Publication)	01	01	01	01	01
Scientific Officer (Publicity)	01	01	02	02	02
Documentalists	04	04	04	04	04
Librarian	02	02	02	02	02
Library Assistant	04	04	04	04	04
Library Attendent	01	01	01	01	01
Printing Superintendent	01	01	01	01	01
Reprographic Technician	01	01	01	01	01
Steno/Typist	03	03	03	03	03
Clerk/Typist	01	01	02	02	02
Micro Photographer/ Audio Visual Operator	01	01	01	01	01
Litho Machine Operator	02	02	02	02	02
Camera Operator/Plate Maker	02	02	02	02	02
Litho Artist	02	02	02	02	02
Machine Operator (Off-set)	02	02	02	02	02
Book binder	02	02	02	02	02

Accounts Division

Accountants	04	04	04	04	04
Shroff	01	01	01	01	01
Accounts Clerks	20	21	21	22	22
Book keepers	03	03	03	03	03
Store keeper	01	01	01	01	01
Asst. Store keeper	01	01	01	01	01
Steno/Typist	03	03	03	03	03

Administration Division

Administrative Secretary	01	01	01	01	01
Asst. Administrative Secretary	01	01	01	01	01
Staff Assistant (Administration)	01	01	01	01	01
Graduate translator	01	01	01	01	01
Clerk/typists	09	09	09	09	09
Telephone Operator/ Receptionist	01	01	01	01	01
Steno/typist	02	02	02	02	02
Drivers	09	09	09	09	09
Peons/Labourers	15	15	15	15	15
Cycle Messenger	02	02	02	02	02

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3. **Staff training**

The former National Science Council as well as its successor the Natural Resources, Energy and Science Authority has been able to train only one officer since inception. This was in 1973, when a senior scientific officer received a Colombo-Plan Scholarship for postgraduate training at the University of Manchester, UK on "The Structure and Organization of Science and Technology". This officer left the organization in 1976.

More recently another scientific officer on his own initiative and cost completed a doctoral degree on "Management of Technological Innovations in Australian Manufacturing Industry" at the University of Wollongong, Australia. On his return to Sri Lanka, he served NARESA for two years to complete his obligations, and left the country for good. Thus at present, except for the four senior managers who have gained experience through their own initiatives and exposures on science planning, and who are now nearing their retirement age, their isn't a single

officer of NARESA specifically trained in the fields relevant to the functions of the organization. This has been one of the constraints that NARESA has faced in its sustained efforts to foster the progress of science and technology, consonant with government policy, and in a broader context to transliterate the achievements of our scientists for the benefit of our people.

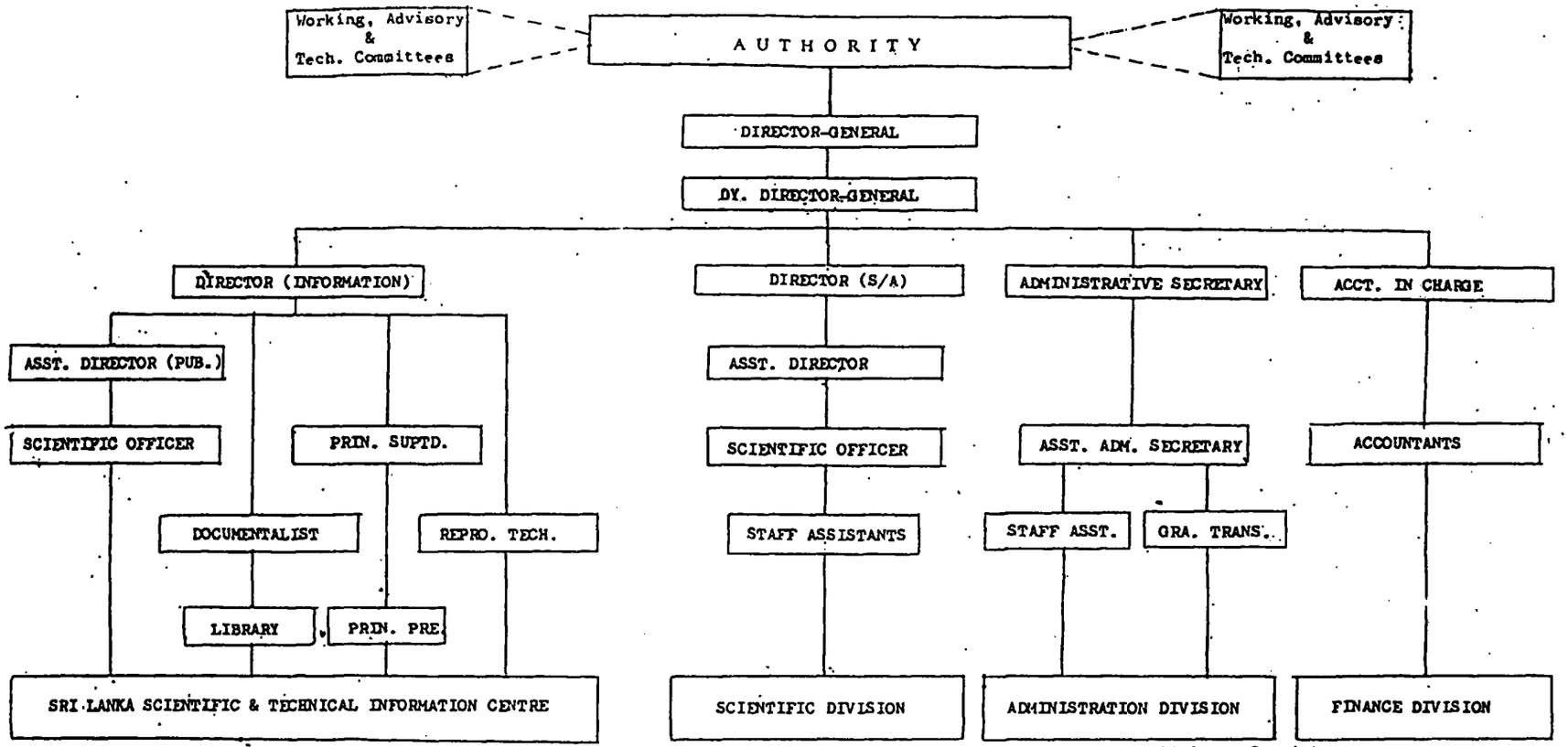
Although in the past, efforts were made to obtain training placements for the staff through the Technical Assistance Programmes, due to a lack of an awareness of the importance of such training, low priority was accorded, and hence no training placements have been awarded to NARESA staff. If NARESA is to enhance its capabilities in policy planning, policy analysis and science management, appropriate training and specialization are pre-requisites. Hence while efforts will continue to be made for placements in appropriate training institutions, NARESA has planned to make budgetory allocations for either total or partial sponsorship of suitable officers.

CHAPTER 3

THE ORGANIZATIONAL FRAMEWORK

The current organizational structure is depicted in Figure 2. The new perspectives to strengthen the role of NARESA in the development and application of science for greater benefit of the country, necessitates some organizational changes. Despite the constraints of a critical shortage of space and manpower, NARESA plans initially to reorganize it organisational framework as depicted in Figure 3 in an effort to meet its obligations to the government and the country.

Figure 2 - Present Organizational Structure



Working Committees

1. Biological Sciences
2. Chemical Sciences
3. Physical & Engineering Sciences
4. Medical & Veterinary Sciences
5. Agriculture & Animal Husbandry
6. Energy
7. Natural Resources
8. Social Sciences
9. Science Information
10. Science Education.

Technical Committees

1. Conservation of Genetic Resources.
2. Biological Control of Quatic Weeds.

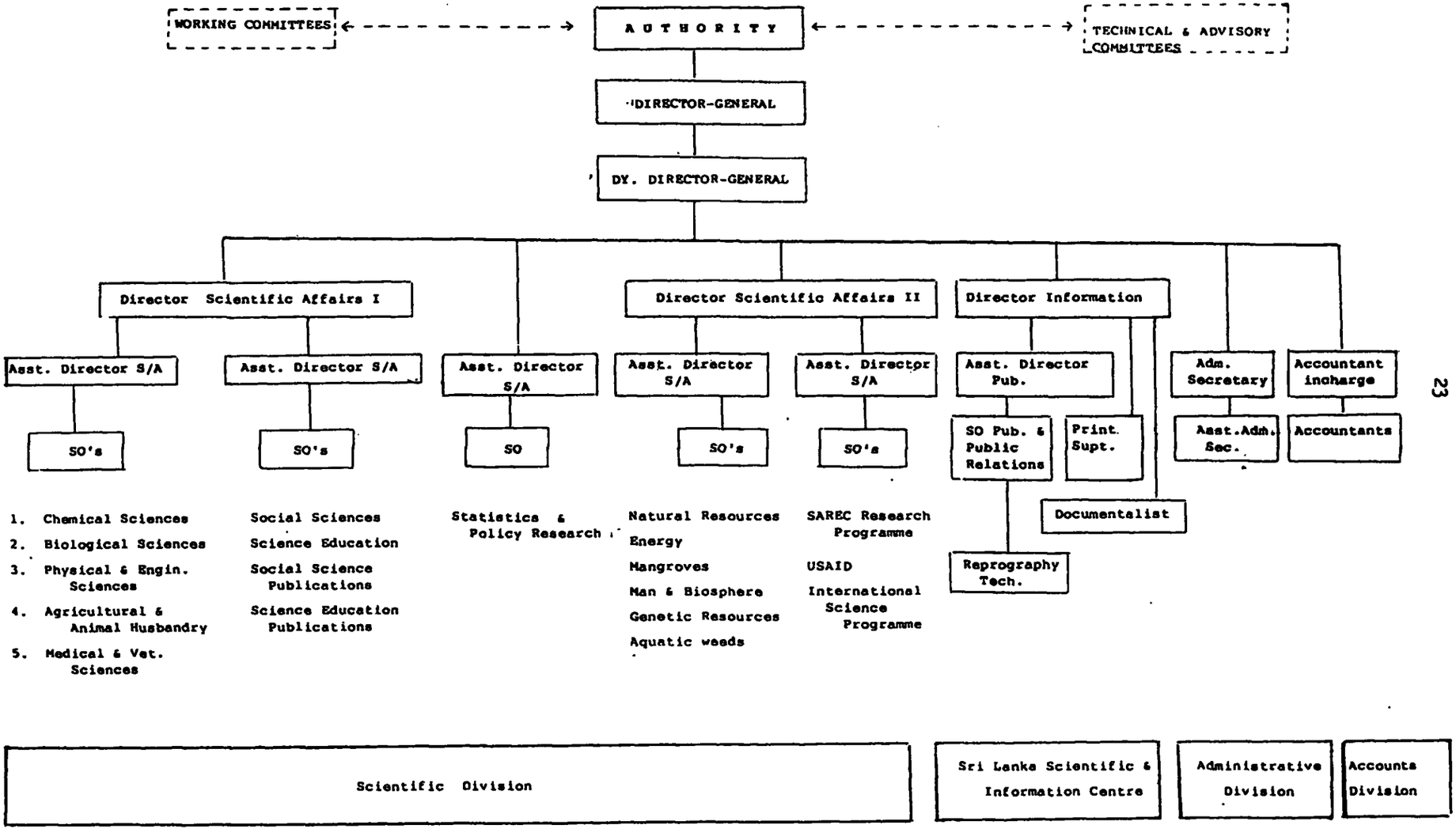
National Committees

1. MAB National Committee
2. Mangroves National Committee

Advisory Committees

1. Buffalo Research Programme
2. Zoological Survey of Sri Lanka.

Figure 3 - Planned Organizational Structure



CHAPTER 4

REVIEW OF PAST ACTIVITIES

(i) Performance during 1986 - 1990:

Despite unprecedented turbulence during major part of the period 1986 - 1990, NARESA proceeded with its plan of activities uninterrupted, and has been able to report significant achievements.

One of NARESA's key functions is to enhance self-reliance in science and technology. This function has been usefully achieved through 4 types of activities.

(a) Training programmes and seminars

(b) Establishing or enhancing facilities for harnessing science and technology for national programmes

(c) Promoting and widening the base for science education

(d) Popularisation of science

NARESA's working committees as a matter of routine function, organized several workshops and seminars for users and producers of scientific know-how. These workshops generally were of three types.

(a) Review seminars for research grantees and their assistants to monitor research progress

(b) Training seminars, e.g. in research methodology, science writing, etc.

(c) Seminars on themes of national interest, e.g. land slides, genetic resources, environmental awareness.

Apart from these types of training programmes since 1987, NARESA co-ordinated the Sri Lanka - UK Programme of training for Laboratory Technicians. Two such training courses were held in 1989 - 1990.

Another important function of NARESA is to initiate and sponsor scientific research. During the period under consideration, 227 research grants were awarded from funds available from the national budget, which was about Rs. 17 million. The relevant data relating to these research grants are summarized in Table 4.

The ten Working Committees and the four Advisory Committees which evaluate and recommends projects for funding, and subsequently

Table 4

Summary of Research grants 1986-1990 (5 years)

	Agri-	Bio	Chem	Phy. &	Medi.&	Social	Total
grants awarded	21	33	50	33	41	49	227
grants completed	05	07	15	15	09	10	61
grants terminated	0	0	02	01	02	03	08
Total Allocation (Rs.'000)	3231	2473	5505	1855	3229	860	17,153
Total spent (Rs.'000)	1597	1577	3522	1193	1640	489	10,018
No. of grantees	34	33	70	34	49	42	262
No.of RA's	07	12	32	15	13	15	94
No.of M.Sc/ Ph.D	03	02	03	03	05	03	19
No.of Publications/ communications	03	20	29	33	11	06	102

monitor and evaluate progress of research in the respective disciplines, carry out many other supporting activities, which are summarized below.

A third important function of NARESA is collection and dissemination of Scientific information. This has been achieved through the following activities undertaken by the Information Centre.

The Sri Lanka Scientific and Technical Information Network (SLSTINET), co-ordinated by NARESA's Information Centre has committed itself for a number of activities, which include,

(a) functioning of network activities of TECHNINET and RERINET

(b) preparation and distribution of contents pages, Science Index and acquisitions to the Library

(c) preparation and distribution of the Union List of Periodicals in S&T (UNILIST), and the Union Catalogue of S&T books (UNICAST).

The NARESA Information Centre through its computer system also undertakes the following.

operation of Micro CDS/ISIS
conversion of UNILIST to UNILIST II
conducting training workshops, in-service training and consultancy for micro CDS/ISIS
distribution of the package (CDS/ISIS)

The Information Centre has photocopy procurement facilities through the British Library Document Supply Centre as well as from the National Library of Australia. At the national level the Centre facilitates inter-library loans, lending services and literature searches.

The printing and binding facility available at NARESA undertakes the publication of the following annually, in addition to any other material produced by the scientific divisions from time to time.

(a) The Journal of the National Science Council (biannually)
(b) The Social Science Journal of Sri Lanka (biannually)
(c) Vidurava (4 numbers annually)
(d) Annual Report
(e) Publication of the Science Investigations series

Apart from the above formal activities, NARESA's professional staff has been associated with many national and international programmes which include preparation of country studies, reports and even scientific papers. A list of some of the key papers and

reports, published or communicated are given in Annex I, and a list of other important scientific publications produced by NARESA are given in Annex II.

(ii) Activities Organized by Working Committees over the past 5 years (1986-1990)

I Natural Resources Working Committee

1.1 Manuscripts on Natural Resources

1.1.1 Economic Geology of Sri Lanka was printed in 1986.

1.1.2 Water Resources and Climate of Sri Lanka are in the process of refereeing and revision.

1.2 Inventory of Mineral Resources (1910-1922)

An inventory of Mineral Resources is under preparation.

1.3 Natural Resources Profile of Sri Lanka (USAID Project)

This document is being printed.

1.4 Reports/Memoranda on issues of National Importance

Memoranda on the following were submitted to the Presidential Secretariat and/or the relevant authorities.

- Reforestation
- Forestry Master Plan
- Quarantine of plants & animals
- Land Alienation Programme

1.5 Research Projects

A project on Ecological Studies on Pine Plantations in Wewelthalawa was completed.

1.6 NAREPP Project

Implementation from 1991.

II Energy Working Committee

2.1 Research project on use of Jatropha oil as an illuminant was completed.

2.2 Evaluation of improved fuelwood stoves for domestic use was carried out and a recommendation sent to Ministry of Power and Energy.

2.3 A compendium of energy-related technologies was published.

III Working Committee on Chemical Sciences

3.1 Seminars/Workshops

(a) A seminar on "Carbohydrates"

(b) A seminar on "Sampling for Quantitative Analysis"

(c) A workshop on "Phytochemical and Biological Investigation on Medicinal Plants", co-sponsored by NARESA, SLAAS and SCAMAP.

(d) A review seminar on the theme "Natural Products Chemistry - Biologically oriented projects".

(e) Two progress review seminars on on-going research in Chemical Sciences

3.2 Publications

(a) Proceedings of the seminar on "Sampling for Quantitative Analysis" was published.

(b) The "Hydrogeochemical Atlas of Sri Lanka" based on work carried out under a NARESA grant was published.

IV Working Committee on Physical and Engineering Sciences

4.1 Seminars/workshops

(a) Seminar on "Landslides - Causes and Prevention". The proceedings of this seminar were published.

(b) A workshop on "Priority Areas for Research". The recommendations of this seminar were documented and circulated to relevant institutions.

(c) Three progress review seminars on on-going research in Physical and Engineering Sciences.

4.2 Publications

(a) Proceedings of the seminar on "Landslides - Causes and Prevention" was published.

4.3 Site Visits

Progress of NARESA sponsored projects were made by site visits to,

University of Sri Jayewardenepura
University of Kelaniya
University of Peradeniya

V Working Committee on Biological Sciences

5.1 Seminars/Workshops

(a) A grantees' seminar was held in September 1986 to review and discuss the work done on NARESA grants.

(b) A seminar on Aquaculture and fisheries was held in 1989 to discuss work done in these fields under NARESA grants.

5.2 Field Visits

Progress of NARESA sponsored projects were made by visits to,

CISIR
University of Peradeniya
University of Colombo

VI Working Committee on Medical & Veterinary Sciences

6.1 Seminars/workshops

(a) Seminar on "Investigational work done by students in Medical and Veterinary Sciences."

(b) Grantees seminar to review the progress of on-going projects was held in 1987, 1989 and 1990.

(c) A workshop to identify priority areas for research in different disciplines in Medical & Veterinary Sciences.

6.2 Publications

(a) Bibliography on parasitology has been prepared.

(b) Compilation of bibliographies on paediatrics and community medicine are in progress.

6.3 Field visits

Progress of NARESA sponsored projects were made by visits to

Veterinary Research Institute, Gannoruwa
University of Colombo, (Medical Faculty)

VII Agriculture and Animal Husbandry Working Committee

7.1 Seminars/Workshops

(a) Two progress review seminars for the CIDA funded potash fertilizer research programme.

(b) A seminar on Organic Fertilizer in Agriculture, sponsored jointly by the F.A.O. Fertilizer project and the G.T.Z. conservation farming project.

(c) A meeting of scientists engaged in research on the use of botanicals as crop protection agents was held to stimulate the formation of a working group to prepare an action plan and a programme for future work.

7.2 Site visits

The Research Monitor of the CIDA funded research programme, visited all the project sites on five occassions during the period.

VIII Social Science Research Working Committee

8.1 Seminars/Conferences/Workshops

(a) Seminar on Resource Allocation for Social Science Research in Sri Lanka (1986).

(b) Seminar on Impact of New Technologies on Society to prepare a paper for 8th General Conference of IFSSO (1987).

(c) Seminar on Societal Resillience and Social Development and Housing (1987) - to prepare a paper for 7th General Conference of AASSREC.

(d) Seminar on Entrepreneurship in Sri Lanka (1987).

(e) Seminar on Collection, Collation and Presentation of Research Materials in Social Science for young scientists (1988).

(f) A series of meetings to discuss the scope the problems of some selected desciplines - i.e. Sociology, Education, Law, History, Political Science and International Relations etc. to prepare "State of the Art" review in each discipline.

(g) A seminar on research projects completed in the field of education (1990).

(h) A seminar on Research projects completed in Social Sciences (1990).

(i) A conference on "Social Change in Sri Lanka" (1990).

8.2 Publications

(a) Sri Lanka Journal of Social Sciences - Vol. 8 Nos. 1 & 2

(b) Sri Lanka Journal of Social Sciences - Vol. 9 Nos. 1 & 2

(c) Sri Lanka Journal of Social Sciences - Vol.10 Nos. 1 & 2

IX Science Education Working Committee

The following activities were undertaken by the Committee.

9.1 Completed a project on science learning at the secondary schools of Sri Lanka.

9.2 Organized a seminar on "Further English for Junior Scientists".

9.3 The new method of assessment of G.C.E. (O.L) Examination as proposed by the Department of Examinations was discussed with the Commissioner of Examinations.

9.4 Conducted an intensive English course for junior scientists.

9.5 A guide book for Simple Investigations (Projects) in Science was prepared.

9.6 Avenues for training in scientific research: Under this scheme four students went on training in the field of Ecology.

9.7 Held an exhibition/workshop on designing and feasibility of production of toys to teach scientific concepts to children.

9.8 Prepared a science policy document on community science

9.9 Organized a meeting with selected science teachers from Kurunegala district to discuss teacher problems, research projects on Science Education and exhibition on teaching aids.

9.10 Published 17 books (supplementary readers) under the Science Education series .

X Scientific and Technical Information Committee

10.1 Seminars and workshops

(a) Three seminars on Sources of Scientific Information

(b) Six workshops on Micro CDS/ISIS Library software. Three of these were supported by IDRC, Canada, one by the Ministry of Health, one by the University Grants Commission, and one by NARESA.

(c) Three workshops on writing scientific papers

(d) A seminar on Database Management Systems for Librarians

(e) A seminar on Hydrological, Geological and Marine Data Systems

(f) Seminar on UNICAST II

(g) Seminar on CRRERIS Service

(i) Regional Meeting of the National Co-ordinators of the Regional Information Network of South and Central Asia (RINSCA)

10.2 Other services

(a) As national distributor for Micro CDS/ISIS, the Information Unit of NARESA has as at March 1991, issued 70 copies of CDS/ISIS to government departments, universities, statutory bodies, private companies and NGO's.

(b) In addition to formal workshops, several in-service training courses have been given to library professionals.

(c) Guidelines for the formulation of an S&T Information Policy has been presented to the former Ministry of Higher Education, Science and Technology.

Xi MAB National Committee

The following activities were undertaken by the Committee.

11.1 Organized and coordinated a regional training seminar on "Ecology and Management of Humid Tropical Rain Forests" for South and South East Asia under the MAB programme, with UNESCO sponsorship in 1987.

11.2 The holding of an international seminar on Ecology and Landscape management in Sri Lanka was coordinated by the MAB National Committee in 1990.

11.3 A delegation of the MAB National Committee visited Southern China in 1988 to study forestry management and research in China. There was a reciprocal visit by a delegation from the Ministry of Forestry in China in April 1989.

CHAPTER 5

STRATEGIES AND PLANS 1991 - 1995

To achieve the objectives of NARESA as given in Section 1 of the Corporate Plan the following programme is planned to be implemented in the period 1991-1995.

A. Enhancing Self Reliance in Science & Technology

	1991	1992	1993	1994	1995
1. Training Programmes and Seminars					
1.1 Seminars for researchers and their assistants					
Agriculture	01	01	01	01	01
Biological Sciences	02	02	02	02	02
Chemical Sciences	01	01	01	01	01
Medical & Veterinary Sci.	02	02	02	02	02
Physical & Engineering Sci.	01	01	01	01	01
Social Science Research	01	01	01	01	01
Information Sciences	-	01	01	-	-
1.2 International Seminars					
Agriculture	-	01	-	-	-
1.3 Seminars on current topics					
Social Science Research	01	01	01	01	01
1.4 Other training programmes/seminars/workshops					
Information sciences - on CDS/ISIS, CD/Rom and other subjects	03	02	02	03	03
Genetic Conservation - for Administrators and Teachers	02	02	02	02	02
MAB - for teachers	01	01	01	01	01
2. Establishing or enhancing facilities for harnessing science and technology for national development					
Information Science - Strengthening of information services	continue	cont.	cont.	cont.	cont.

	1991	1992	1993	1994	1995
Genetic Conservation -					
Environmental awareness for decision makers, policy planners and media (No. of workshops/seminars)	01	01	01	01	01
3. Assisting in developing science education					
Information Science					
- Publication of vidurawa	improve quali-ty	cont.	cont.	cont.	cont.
- Workshop for science writers	01	acti-vity to be planned	01	01	01
Genetic Conservation -					
- Programmes for upgrading environment and conservation education in schools	02	02	02	02	02
Science Education					
- Publication of supplementary science reading material	05	05	05	05	05
- Collaboration with NIE and Min. of Education in upgrading teaching learning process revision of curricula, promotion of science education research by teachers, production of science teaching aids	conti-nue	cont.	cont.	cont.	cont.
- Community Science Education Project	Initi-ate	cont.	cont.	cont.	cont.
- Science Project work	cont.	cont.	cont.	cont.	cont.
- Workshop on Science Project	1	1	1	1	1

	1991	1992	1993	1994	1995
- Assist in building up Library Resources on Science Education in collaboration with NLSB	cont.	cont.	cont.	cont.	cont.
- Surveillance Activity in regard to the program of Science Education in Sri Lanka including Adult Science Education	Initi-ate	cont.	cont.	cont.	cont.
- Collaboration with autonomous and semiautonomous bodies involved in science education	initi-ate	cont.	cont.	cont.	cont.
4. Popularisation of science					
Information Science - Publication of Vidurava - see above					
- Exhibitions/Publications	-	-	Exhibition	New publi-cation	New publi-cation
Publication of 'Vidyaven Apata' and distribution to potential beneficiaries under Poverty Alleviation Programme	01	02	-	-	-
Genetic Conservation - Increasing Public awareness through posters, leaflets, films	conti-nue	cont.	cont.	cont.	cont
NATMANCOM - setting up a Mangrove Park in Negombo Lagoon and provision of educational and recreational facilities on mangroves and related ecosystems					
Demarcation, development, protection conservation and landscaping	conti-nue	cont.	cont.	cont.	cont.

	1991	1992	1993	1994	1995
B. **Support to Research and Development**					
1. **Priorities for research in the different disciplines**					
Information Science - Develop data-bases awareness services and network systems	initi-ate	cont.	cont.	cont.	cont.
2. **Enhancing research capability in young scientists**					
Information Sciences - awareness activities on information sciences for young scientist	-	Initi-ate	cont.	cont.	cont.
3. **Award, monitoring and evaluation of research grants**					
3.1 **NARESA GRANTS**					
(a) Chemical Sciences					
New Grants awarded	03	06	07	09	10
On going grants evaluated	24	25	26	28	30
Grants completed	05	06	07	08	09
Evaluation of applications for grants	06	08	10	12	14
(b) Physical & Engineering Sciences					
New Grants awarded	08	06	06	06	06
On going grants evaluated	19	24	26	27	27
Grants completed	03	04	05	06	06
Evaluation of applications for grants	10	10	11	12	12
Site visits	01	01	01	01	01

	1991	1992	1993	1994	1995
(c) Medical & Veterinary Sciences					
New Grants awarded	06	06	07	08	09
On going grants evaluated	25	25	25	25	25
Grants completed	05	05	06	07	08
Evaluation of applications for grants	15	15	18	18	20
(d) Biological Sciences					
New Grants awarded	05	05	06	07	08
On going grants evaluated	18	18	18	18	18
Grants completed	03	04	05	06	07
Evaluation of applications for grants	12	12	14	14	15
(e) Technical Committee on Aquatic Weeds					
Biological control of salvinia					
Maintenance of a culture of the control agents	continue	cont.	cont.	cont.	cont.
Studies on aquatic flora in water bodies cleared of salvinia and their control	continue	cont.	cont.	cont.	cont.
(f) NATMANCOM					
On going grants evaluated	02	-	-	-	-
New grants awarded	-	03	03	03	03
(g) Science Education					
New grants awarded	01	05	05	05	05

	1991	1992	1993	1994	1995
(h) Agriculture & Animal Husbandry					
New grants awarded	02	02	02	02	02
Monitoring of ongoing grants	continue	cont.	cont.	cont.	cont.
Evaluation of applications for grants	continue	cont.	cont.	cont.	cont.
Site visits	01	01	01	01	01
(i) Social Science					
New grants awarded	10	10	10	10	10
Monitoring of ongoing grants	continue	cont.	cont.	cont.	cont.
Evaluation of applications for grants	continue	cont.	cont.	cont.	cont.
(j) MAB					
1. Botanical Survey Programme preparation of checklists of plants of special habitats	02	02	02	02	02
2. Research projects on natural ecosystems	01	02	02	02	02
4. Awards					
4.1 National Award for Scientific Achievement	03	-	02	-	-
4.2 Merit Awards - evaluation, selection and award	04	-	04	-	04
4.3 TWAS/NARESA Prizes for young scientists - evaluation of applications selection and recommendation to TWAS	02	02	02	02	02

	1991	1992	1993	1994	1995
5. **Publications**					
- Sri Lanka Journal of Social Sciences	1 vol	01	01	01	01
- Bibliographies etc. on Medical & Vet. Sciences	01	01	01	02	02
- Bibliographies etc. on Biological Sciences	-	-	01	01	01
- NSC Journal	conti-nue	cont.	cont.	cont.	cont.
C **International Cooperation in Science and Technology**					
1. **SAREC-NARESA Research Cooperation**					
1.1 **Buffalo Research Programme**					
(a) On going projects evaluated	32	32	10	10	10
(b) New grants awarded	-	-	10	-	-
(c) Grants completed	04	10	16	06	10
(d) Development of a Research farm	Main-tenance	cont.	cont.	cont.	cont.
(e) Establishment of intensive buffalo farming units	05	-	05	-	-
(f) Seminars	01	-	01	-	01
(g) Extension activities - preparation of leaflets on buffalo farming	-	initi-ate	cont.	cont.	cont.
(h) Enhancing research capability of young scientists					
- Appointment of RAs	10	10	05	05	-
- Award of Postgraduate degrees	-	03	02	02	03
(i) Collaboration with Swedish Scientists	conti-nue	cont.	cont.	cont.	cont.

		1991	1992	1993	1994	1995
1.2	**Coastal Ecology Research Programme**					
(a)	Ongoing projects evaluated	06	06	06	05	05
(b)	New grants awarded	-	-	05	-	-
(c)	Grants completed	-	02	02	03	04
(d)	Seminars	01	-	01	-	01
(e)	Enhancing research capability of young scientists					
-	Appointment of RAs	10	04	04	12	-
-	Award of Postgraduate degrees	-	02	03	02	04
(f)	Collaboration with Swedish Scientists	continue	cont.	cont.	cont.	cont.
1.3	**SAREC International Contacts Fund**					
	Provides partial support for scientists to present papers at international conferences, seminars.					
	No. of scientists to be benefited	20	20	20	20	20
1.4	Purchase of scientific periodicals to university libraries in Sri Lanka	continue	cont.	cont.	cont.	cont.
1.5	Purchase of urgently needed spareparts for Sri Lankan scientists	continue	cont.	cont.	cont.	cont.
2.	**USAID Programme**					
	Evaluation of preproposals	15	15	15	15	15
	New grants awarded	01	01	01	01	01
	Monitoring and evaluation .. ongoing grants	03	02	02	02	02

	1991	1992	1993	1994	1995
3. **Mangrove project**					
Monitoring and evaluation	conti-nue	-	-	-	-
4. **MAB**					
4.1 **Flora Project** (funds from ODA)					
Inventorising plants of Sri Lanka	40 sp	40 sp	40 sp	40 sp	40 sp
4.2 Interaction with UNESCO and other MAB Committees	conti-nue	cont.	cont.	cont.	cont.
5. Collaboration with agencies such as USAID, CSC,etc. for promotion and conservation of our fauna, flora and endangered habitats; International workshops; projects, eg. key species study	02 pro jects	01 pro-ject	01 pro-ject	01 pro-ject	01 pro-ject
6. **Interaction with other international agencies such as TWAS, ICSU, ASCA**	conti-nue	cont.	cont.	cont.	cont.
D. **Programmes and Reports concerning Policies and Measures to Promote Science, Natural Resources, Development and Energy**					
1. **Programmes and Policy analysis reports on S&T**					
Science Indicators Project	Phase III	Phase IV	Phase V	--	--
Science and Technology surveillance programme	Initi ate	Cont.	Cont.	Cont.	Cont.

	1991	1992	1993	1994	1995
2. Programmes and Policy analysis reports on Natural Resources					
2.1 Study of issues of National significance and report to relevant authority (no. of issues reported on)	01	01	01	01	01
2.2 Documentation of natural resources (no. of documents published)	02	01			
2.3 Natural Resources Profile	Publication & distribution				
2.4 Natural Resources and Environmental Policy Project (NAREPP) - funded by USAID					
(a) Natural Resources Information Center					
Development of infrastructure	Initiate building construction	complete building			
Draw up plan for organisation of the centre using services of, (i) information specialist (4 weeks), (ii) local consultant (6 months)	prepare plan				
Organisation, indexing, storage of information on natural resources, compilation of retrieval tools, provision of computerised detabase on natural resources	Initiate work	continue	cont.	cont.	cont.

	1991	1992	1993	1994	1995
Training of staff	01 (03 months	01 (03-06 months)	conti-nue	cont.	cont.
(b) Research support					
Identification of priority areas, including policy issue, economic analysis	Iden-tifica tion of prio-rities	support specific projects	support ongoing research projects and new projects	conti-nue	cont.
(c) Workshops, Seminars, etc. for rational management of Natural Resources	02	02	02	02	02
2.5 Review of policies and advise government on aspects concerning Genetic Conservation and Endangered Habitat Conservation	Assist in drawing management plan for conservation of Ritigala Kanda, Horton Plains, and Peak Wilderness				
3. **Programmes and Policy Analysis reports on Energy**					
3.1 Commissioning of research of potential importance in areas not being done by other agencies	01	01	01	01	01
3.2 Organising seminars/workshops/ field visits in under-explored areas and areas where coordination of different agencies is needed	03	02	02	02	02

	1991	1992	1993	1994	1995
3.3 Coordination/support for evaluation and testing of new technologies	02	02	02	02	02
E. Collection, Dissemination and Coordination of Activities relating to science information					
Information Sciences					
1. To achieve a high level of service through SLSTINET, facilities such as acquisition of books, journals, databases, computer facilities, equipment for information services will be improved. Coordination activities will be stepped up by recruitment and training of staff	conti-nue	cont.	cont.	cont.	cont.
2. Work of the Printing Press	Pur-chase of equipment	-	-	-	-
Printing.	Conti-nue	cont.	cont.	cont.	cont.

CHAPTER 6

Budget Estimate 1991 - 95

A. Capital Budget 1991 - 1995 (Rs.'000)

	1991	1992	1993	1994	1995
1. Grants for Research & Other Scientific work					
(a) Agriculture & Animal Husbandry	550	750	600	600	600
(b) Biological Sciences	550	850	750	800	850
(c) Chemical Sciences	900	1250	1100	1200	1300
(d) Medical & Vet. Sciences	600	850	750	800	850
(e) Physical & Eng. Sciences	400	650	600	700	800
(f) Social Sciences	200	370	350	350	350
(g) Science Education	75	125	100	100	100
(h) Information Sciences	100	150	130	140	150
(i) Biological Control of Aquatic Weeds	160	325	300	300	300
(j) Natural Resources	75	90	75	75	75
(k) Energy	50	90	100	100	125
Total	**3660**	**5500**	**4855**	**5165**	**5500**
2. Man and Biosphere	350	600	500	500	500
Total	**350**	**600**	**500**	**500**	**500**

		1991	1992	1993	1994	1995
3.	**Working/Technical Committees**					
(a)	Agriculture & Animal Husbandry	30	30	30	30	30
(b)	Biological Sciences	30	30	40	50	55
(c)	Chemical Sciences	30	60	65	70	75
(d)	Medical & Vet. Sciences	30	40	50	60	70
(e)	Physical & Eng. Sciences	25	50	55	60	65
(f)	Social Sciences	25	50	60	60	60
(g)	Science Education	30	30	30	30	30
(h)	Information Sciences	25	50	50	60	70
(i)	Biological Control of Aquatic Weeds	25	30	30	30	30
(j)	Natural Resources	50	60	60	70	70
(k)	Energy	25	50	50	60	60
(l)	Zoological Survey	120	-	-	-	-
(m)	Conservation of Genetic Resources	65	70	65	65	65
(n)	Other committees	30	50	50	60	60
Total		**540**	**600**	**635**	**705**	**740**

	1991	1992	1993	1994	1995
4. Special Reserch Projects					
(a) Mangrove Research (including Mangrove Park)	250	150	50	50	50
(b) S & T Policy Studies	150	130	130	150	150
(c) Flora Project	110	120	130	140	150
Total	**510**	**400**	**310**	**340**	**350**
5. Subscriptions to International Scientific Organizations					
(a) CSC	550	550	550	550	550
(b) ICSU	45	75	60	60	60
(c) TWAS	45	60	50	50	50
(d) IFS, AASSREC and others	60	65	60	60	60
Total	**700**	**750**	**720**	**720**	**720**
6. Seminars/Symposia	150	250	150	150	150
Total	**150**	**250**	**150**	**150**	**150**

	1991	1992	1993	1994	1995
7. **Participation in International**					
Scientific work	200	300	200	225	250
Total	**200**	**300**	**200**	**225**	**250**
8. **Janasaviya activities/publicity**	200	200	150	150	150
Total	**200**	**200**	**150**	**150**	**150**
9. **Presidential/NARESA/Merit Awards**	30	-	200	-	50
Total	**30**	**-**	**200**	**-**	**50**
10. **SLSTIC**	2070	3000	1900	2000	2015
Total	**2070**	**3000**	**1900**	**2000**	**2015**
11. **Office furniture,fittings &**					
Equipment	200	400	200	200	200
Total	**200**	**400**	**200**	**200**	**200**
Capital Grant - Total		**12000**			

	1991	1992	1993	1994	1995
12. Foreign aid expected					
(a) CIDA	5000				
(b) USAID - 1. Research grants	3000	2300	3000	3000	3000
2. NAREPP	6000	14200	3600	2800	3000
(c) SAREC	9000	10200	15500	15500	6500
(d) ODA	2235	1965	2865	2595	1965
(e) Miscellaneous	3265	3000	3000	3000	3000
Total	**28500**	**31665**	**27965**	**26895**	**17465**
B **Recurrent Expenditure 1991-1995**					
1. Staff emoluments & Training	6325	9393	9672	10639	11703
2. Authority expenditure	86	125	137	151	166
3. Office administration	1989	2607	2867	3154	3469
Total	**8400**	**12125**	**12676**	**13944**	**15338**
GRAND TOTAL	**45510**	**55790**	**50431**	**50859**	**43363**

ANNEX I

Staff Papers and Reports, Published or Communicated 1986 - 1990

1986:

Staff Publications:

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