

Natural Resources, Energy & Science Authority  
47/5, Maitland Place  
Colombo 7.

1997-06-01

Hon. Minister of Science, Technology &  
Human Resources Development,  
Ministry of Science, Technology and  
Human Resources Development,  
320, T.B. Jaya Mawatha  
Colombo 10.

Dear Sir,

**Annual Report of the Natural Resources, Energy & Science Authority of Sri Lanka for the period 1st January to 31st December 1995**

In terms of Section 16 (111) of the Natural Resources, Energy & Science Authority of Sri Lanka Act No. 78 of 1981, I have the honour to submit the Annual Report of the Natural Resources, Energy and Science Authority of Sri Lanka for the period 1st January to 31st December 1995 together with -

- (a) A copy of the Audited Income and Expenditure Account
- (b) A copy of the Audited Balance Sheet
- (c) Auditor General's Report

Yours sincerely,

*Priyani E. Soysa*

Prof. Priyani E. Soysa  
Director General  
**Natural Resources, Energy & Science  
Authority of Sri Lanka**

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**1.0 MEMBERS OF THE NATURAL RESOURCES, ENERGY & SCIENCE  
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 Dr. A.S. Induruwa  
 Prof. N. Kodagoda  
 Dr. C.R. Panabokke  
 Dr. Upali Pilapitiya  
 Mr. D.G. Senadhipathy  
 Dr. Tissa Vitarana  
 Dr. R.O.B. Wijesekera

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 FRCP (Edin. & Lond)  
 FCCP, DCH (Eng)

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 Mr. M. Watson BSc (Cey), MPhil (Lond)  
 Mr. R.M.W. Amaradasa BSc (S.L), MSc (S.L)

**Director (Information)**

Mrs. D.D.D. Talagala BA (Cey), ASLLA  
 (from 01/10/95)

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 Dr. W.B. Yapa BSc (S.L), MPhil (S.L.), PhD  
 (upto 14/11/95) (Germany)

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 (on no pay leave) MSc (U.S.S.R.), MSc (Japan)  
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 (U.S.S.R.)  
 Dr. T.F. Dias MSc(U.S.S.R.), PhD(U.S.S.R.)  
 Mrs. P.G.P. Hewavitharanage BSc (Hons) (S.L.)  
 (on contract)

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 Miss. V.N. Perera BSc (S.L.), ASLLA  
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 Mrs. V.N. Dharmaratne ASLLA  
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 Mr. M.H.M.S. Hamid  
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**Graduate Translator**

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**Staff Assistant (Adm)**

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**Printing Superintendent**

Mr. K.P. Senanayake

**Accounting Assistant**

Mrs. Y.J. Pathirana

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### 3.0 INTRODUCTION

Natural Resources Energy & Science Authority (NARESA) is the successor to the National Science Council (NSC) which was set up under the Ministry of Scientific Research and Housing by Act. No. 9 of 1968. 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 was created by Act No: 78 of 1981. This new organization was then brought under the umbrella of His Excellency the President.

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;

The work covered in 1995 has adhered to the above defined objectives. Work has expanded with allocation of more money for capital expenditure including research. The SAREC/SIDA perspectives have expanded beyond the support for Buffalo Research and Coastal Ecology. The memorandum of agreement was signed in 1994. The Energy projects are supervised by the Steering Committee on Energy. The purchase of computers had to await specifications and technical evaluation by CINTEC in 1995.

#### 4.0 Measures for Enhancing Self-Reliance in Science and Technology

##### Seminars and Workshops

The following seminars were held during the year 1995, to share experiences and update knowledge, as part of the organisations effort to enhance self-reliance.

- \* A seminar on **"Local Impact of Global Transformation with special reference to Social Development Issues"** was held on 2nd May 1995. There were 4 presentations by resource persons. Twenty Five invited social scientists participated in this seminar.
- \* A seminar on **"Application of Geographical Information Systems" (GIS 11)"** was held on 25th May 1995. This was aimed to cover the application of GIS in Biological, Agricultural and Medical fields. Six resource persons from universities and government organisations made their presentations on work carried out by them. 70 persons from Research Institutions, Universities and Government Departments who are engaged in GIS studies participated at the seminar.
- \* A seminar on **"Frontiers of Science"** was held on 6th October 1995 at NARESA. Five resource persons made presentations at this seminar which was targeted to undergraduates reading for the science degree. An overall view of the employment avenues for science graduates in various sectors, was presented. 100 persons participated at the seminar.
- \* A seminar on **"Research Policy"** was held on 31st January 1995. There were 5 presentations by resource persons. Sixty seven persons from Universities and Research Institutions participated in this seminar.
- \* A consultative meeting on **"Research Priorities"** was held on 10th March 1995 with the view of finalizing priority areas for research in different disciplines. There were 47 participants at this meeting.

##### Public Awareness Seminars - "Science for Everyday Life"

The following public seminars were held under the public awareness programme - **"Science for Everyday Life"**. The objective of this seminar series is to create general awareness of the usefulness of science, and educate selected sectors of the population on the use of science and simple technologies to enrich life and living.

Title of the Seminar	Date/ Venue	No: of participants
Food & Nutrition	4th May 1995 Sri Lanka Broadcasting Corporation (SLBC)	100
Medicinal Plants	27th May 1995 Dandeniya Maha Vidyalaya, Opanayake	40
Land Slides	17th June 1995 Yatiantota Madya Maha Vidyalaya, Yatiantota.	120
First Aid	23rd June 1995 Thopawewa Maha Vidyalaya, Polonnaruwa.	130
Land Slides	22nd July 1995 Kolonna Maha Vidyalaya, Kolonna.	145
Food & Nutrition	29th August 1995 Coconut Cultivation Board (CCB)	50
Land Slides	23rd September 1995 Kaikawala Madya Maha Vidyalaya.	250
Environmental Conservation	7th October 1995 Dharmashoka Vidyalaya, Ambalangoda.	340
Food & Nutrition	11th November 1995 Kumaradasa Maha Vidyalaya, Wellawaya .	250

\* There were 20 presentations by recipients of travel grants under the SAREC International Contacts Fund.

\* A consultative meeting on "Renewable and Alternate Energy Sources and applications relevant to Sri Lanka" organised by the Division of Alternate Sources of Energy of the Ministry of Science, Technology & Human Resources Development and Steering Committee on Energy of NARESA was held on 19 May 1995 at NARESA. The main objective of the meeting was to arrive at a consensus on practical applications of proven alternate and renewable energy technologies which are relevant to Sri Lanka. 10 papers

based on case studies on the areas of dendro-thermal, biogas, bio-conversion, gasification, small micro-hydro, solar thermal, solar pv, water pumping, battery charging, and delivery of energy services were presented. 12 resource persons and about 42 invitees from relevant government institutions and private institutions participated at the meeting.

- \* Progress Review Seminars were held by Steering Committees for recipients of NARESA grants to present their work. This was to provide a forum for discussion in addition to the monitoring aspect.

#### **5.0 SPONSORSHIP FOR SCIENTIFIC RESEARCH**

In accordance with the normal practice, applications were invited for research grants, by advertisement in the national press. Details regarding the research grant scheme are given in Tables I, II and III.

#### **6.0 RESEARCH AND CO-ORDINATION IN ENERGY**

A Division of Alternate Sources of Energy was established at the Ministry of Science Technology & Human Resources Development with a view to study and develop the alternate energy sources and applications relevant to Sri Lanka. The Division liaises with Steering Committee on Energy in carrying out its activities.

- \* **Pilot Project on Disposal of Market Garbage by Anaerobic digestion producing Fertilizer and Biogas**

NARESA granted 30% of the estimated cost of Rs. 849,195.94 to State Engineering Corporation (SEC) to commence the construction work of the project on the request of the Hon. Minister of Science, Technology & Human Resources Development. The construction of 30 digesters with 30 ton capacity at Kirillapone was carried out under the project. It is planned to generate electricity and connect the supply to the main grid and make available the fertilizer produced from the project for sale. The project is carried out under the guidance of Dr. A.N.S. Kulasinghe and the National Engineering Research Design (NERD) Centre.

- \* **Visit of Indian Delegation on Energy**

The Committee met an Indian delegation comprising Dr. K.C. Khandelwal and Mr. B.M.C. Garg on 03 July 1995 and had discussions on the following areas of alternate sources of energy.

- Dendro-Thermal Power Generation,
- Use of Paddy husk at rice mills for the generation of electrical power
- Wind Energy

As a follow up, three (3) project proposals have been submitted to the Ministry by Prof. K.K.Y.W. Perera (Chairman, Arthur C. Clarke Centre) on the above subjects.

- \* **Appointment of a Technical Consultant for the SAREC funded project on "Solar Energy in Tea Drying Process"**

On the recommendation of the Steering Committee on Energy, arrangements were made to appoint Dr. A.N.S. Kulasinghe as a consultant to this project, which is carried out at TRI in collaboration with Kungl Tekniska Hogskolan (KTH), Sweden.

#### **7.0 SRI LANKA SCIENTIFIC AND TECHNICAL INFORMATION CENTRE (SLSTIC)**

- \* **Additions to the SLSTIC library during the year 1995:**

Books	-	196
Periodical titles	-	128
News Letters	-	140
Research reports	-	41
Theses	-	13
Reprints	-	05
Pamphlets	-	36

- \* **Network activities**

- \* **Sri Lanka Scientific and Technical Information Network (SLSTINET)**

Membership at the end of the year was 108.

Members were provided with an opportunity to listen to a speech delivered by a visiting librarian from Thailand. The title of the speech was "Current trends in developing information centres in Asia"

At the SLSTINET Annual General Meeting, a seminar was organised which included the three speeches mentioned below:

- Networking in Sri Lanka with special reference to SLSTINET - Mr. N.U. Yapa
- Strategies for introducing marketing into libraries & information Centres - Mr. Harrison Perera

- Role of SLSTINET/NARESA in the dissemination of S & T Information through LEARN - Dr. Abhaya Induruwa

Participated actively in all seminars and workshops conducted by Health Literature Library and Information Services (Hellis), Agricultural Information Network (Agrinet) & Environmental Library Network (Enlinet)

- \* **Documentation and Information Services**

- \* **Current Awareness Services (CA Services)**

Compilation of a "News Digest" including selected articles on S & T appearing in the news papers was commenced.

A CA Service to circulate new periodicals/ news letters acquired by the library, among the NARESA staff was organized.

- **Document Procurement Service**

Photocopies of articles from periodicals which are not available in Sri Lanka were obtained on request from:

British Library Document Supply Centre.  
National Library of Australia (NLA) through ASTINFO.

- **Literature Searches**

Literature searches were undertaken on request on specific subjects using the SLSTIC library collection and NARESA databases.

- \* **CDS/ISIS Activities**

New version of CDS/ISIS 3.07 was received and distributed among 28 institutions. Personnel at 08 institutes were trained.

A simplified manual of CDS/ISIS in English medium was published. This was translated to Sinhala and will be published in 1996.

A questionnaire was circulated among ISIS user libraries to evaluate the usage of CDS/ISIS.

- \* **SAREC Project on S & T Information**

A project to develop a National Information Network for exchange of scientific and technical information was implemented at NARESA. This is funded by SAREC. SLSTIC is the pilot coordinating centre. All the Scientific Officers and Documentalists were trained on the use of computers under this project. One CD ROM was purchased and arrangements were made to purchase two more.

\* **Scientific and Technical (S&T) Unit**

A S & T Unit was formed during the year 1995. The following databases were developed by this unit.

- Database on ongoing research  
Directory of ongoing research in Sri Lanka was published and the database will be updated continuously.
- Database on S & T personnel in Sri Lanka  
This database was updated for 1995 and will be published as a directory in early 1996.
- Database on S & T Institutions:  
Includes information on S & T institutions in Sri Lanka. This is being compiled.
- Database on NARESA research grants.
- Database on Scientific databases in Sri Lanka
- Database on S & T Funding

**8.0 REPORTS, PUBLICATIONS AND PROGRAMMES OF NATIONAL INTEREST**

\* **Regular Publications**

- Journal of the National Science Council - Volume 23, numbers 1,2,3 and 4 were published.
- Vidurava - 2 issues in Sinhala (Vol. 17 No:1 - "**Medicinal Plants**"; Vol 17 No: 2/3/4 - "**Rational Use of Drugs**"); and one combined issue in English (Vol. 17 No:1/2 - "**Medicinal Plants**") were published.
- Science Education series: No:36 (English)- "**Scientific Principles seen in Ancient Artefacts and Monumental Structures**" was published.
- Sri Lanka Journal of Social Sciences Vol. 17 Nos. 1 and 2 were published.
- NARESA Newsletter - 4 issues were published.

\* **Other Publications**

- Proceedings of the seminar on "**Aspects of Research**"
- Report on "**Medical Ethics**"
- Proceedings of the seminar on "**New Directions in Science and Technology in Sri Lanka**"

- Proceedings of the seminar on **"Renewable and Alternate Energy Sources and Applications relevant to Sri Lanka"**

## 9.0 RESEARCH AND CO-ORDINATION ACTIVITIES

### \* Unauthorized collection and export of Fauna and Flora

After long and intense deliberations, recommendations were made to the Hon. Minister, the Hon. Prime Minister and H.E. The President by a special Committee appointed by NARESA to study the **"Unauthorized Collection and Export of Fauna and Flora"**.

These aspects were also discussed with the Minister of Science, Technology and Human Resources Development and a representative of the Ministry of Fisheries.

One of the major recommendations made by the Committee which had a wide consensus among all consulted sectors was that there be a single Authority governing the issue of licenses for the export of fauna and flora . Since the Fisheries Ministry representative was not in agreement, the Committee requested that if the Department of Fisheries wants to continue to issue permits for fish, it should also undertake to cover all aquatic fauna and flora.

- \* NARESA took over the administration of a research project on Silvicultural Research and Resource Management funded by the MacArthur Foundation, USA. The grant awarded to Dr. B.M.P. Sinhakumara, University of Sri Jayewardenepura, for 1995 - 1997 is US \$ 38,500
- \* Three nominations were sent for consideration for the International Centre for Genetic Engineering & Biotechnology (ICGEB) pre-doctoral fellowship programme for 1995.
- \* Three project proposals on medicinal plants by 3 groups of scientists were forwarded to the World Health Organization, (WHO) through NARESA, to be considered for funding.

## 10.0 AWARDS FOR SCIENTIFIC ACHIEVEMENTS

### \* National Awards

In keeping with the objectives of fostering Science and Technology in the country, NARESA offers two awards every three years for the most significant achievements in science. The first of these is the **"President's Award for Scientific Achievement"** and the second is the **"NARESA award for Scientific Achievement"**. NARESA initiated this scheme of awards in 1982, with the concurrence of His Excellency

the President, to honour scientists and technologists for their achievements in various fields of science. This was advertised and a panel of judges including foreign experts was appointed.

The President's award carries a cash prize of Rs. 100,000/= and a certificate. The NARESA award carries a cash prize of Rs. 50,000/- and a certificate.

\* **Merit Awards**

This scheme of awards was instituted in order to bestow on researchers who have attained a high level of excellence in their research work, the recognition they deserve for their contribution to the advancement of science. These awards are also meant to motivate recipients of research grants from NARESA to achieve and maintain high standards of scientific research.

The NARESA merit award ceremony was held on the 18th of November 1995. The awards were presented by the Hon. Bernard Soysa, Minister of Science, Technology and Human Resources Development, who was the chief guest. The following grantees whose research projects were completed during 1993/1994 were the recipients of these awards.

- Physical, Engineering and Mathematical Sciences  
Dr. J. Katupotha, Univ. of Sri Jayewardenepura
- Chemical Sciences  
Dr. L.B. de Silva  
Dr. W.H.M.W. Herath, Medical Research Institute

\* **Third World Academy of Sciences, Awards**

The above scheme of awards was instituted by NARESA for the annual award of prizes for young scientists in the fields of Biology, Chemistry, Mathematics and Physics, with financial assistance from the Third World Academy of Sciences. The prizes are intended to give recognition to talented young scientists who have attained a high level of excellence in their research work.

For 1995, Dr. R.M.G. Rajapakse and Dr. A.D.L. Chandanie of Dept. of Chemistry, Univ. of Peradeniya were nominated for the prize in chemistry.

**11.0 PARTICIPATION AT CONFERENCES, SEMINARS AND WORKSHOPS OVERSEAS**

- \* Prof. Priyani E. Soysa, Director General participated in the following

- Planning meeting for setting up an Asian Network of Biological Sciences (ANBS), Singapore, 13-15 February
- 21st session of the WHO South-East Asia Advisory Committee on Health Research, New Delhi, India, 10-13 April. This was not as a representative of NARESA but as an individual to represent Sri Lanka.
- The conference on research training for countries with a limited research capacity, Karlsundstrand, Denmark, 9-13 September. This was on a special invitation.
- \* Prof. C. Dahanayake (Board Member ) represented NARESA at the 18th biennial meeting of the Commonwealth Science Council from 5th-8th June 1995 in Bangalore, India.
- \* Mr. Patrick Amarasinghe, Chairman, Ceylon National Chamber of Industries represented NARESA at the International Workshop on Commercialization of R & D output from 27-29th November 1995 in Jakarta, Indonesia.
- \* Dr. Tissa Vitarana (Board Member) represented NARESA at the symposium on "Changing Trends in Science Policy-Theory and Practice" from 23-25th November 1995 in Gothenburg, Sweden. Prof. Priyani E. Soysa had been invited for this symposium but was unable to attend.
- \* Mrs. Swarna P. Prelis, Director Scientific Affairs participated in the following
  - 10th ASTINFO Consultative Meeting and Regional Seminar/Workshop, Beijing, China, 18-23 September.

Mrs. Prelis represented the Director General who is the Liaison Officer for ASTINFO (Regional Network for the exchange of Information and Experiences in the Asia Pacific Region) at the meeting and Regional Seminar on Information Education Strategies for the 21st century hosted by the Institute of Scientific and Technical Information of China (ISTIC)

  - Workshop on Information services and the Development of Enterprises, Beijing, China, 25-26 September.
- \* Mrs. Renuka P. Sugathadasa, Documentalist, participated at a two week workshop on Science and Technology Information Management, Taipei, Taiwan, 11-23 September.
- \* Prof. A.J. Gunawardane, member of the Steering Committee on Social Sciences participated in the Eleventh Biennial conference of the Asian Association of Social Science Research Councils in New Delhi from 16-20 October 1995 representing NARESA which is the Association's focal point in Sri Lanka.

- \* Prof. R. Ramasamy, Chairman of the Steering Committee on Biotechnology participated in the Board of Governors meeting of International Centre for Genetic Engineering & Biotechnology (ICGEB) held in New Delhi from 6-8 November representing the national scientific focal point (NARESA).
- \* Prof. R. Ramasamy (Chairman, Steering Committee on Biotechnology) and Prof. U. Samarajeewa (member of Steering Committee of Biotechnology) participated in the SAARC Expert Group Meeting on Net Working Arrangements held in New Delhi on 30-31 August representing NARESA.

## 12.0 INTERNATIONAL SCIENTIFIC ACTIVITIES

- \* **Research Cooperation between Sri Lanka and Sweden**

### **Buffalo Research Programme**

A Regional Symposium on "The Role of Buffalo in Rural Development in Asia" organized by NARESA's Advisory Committee on Buffalo Research, to review the activities completed during the Phases I & II of the research programme was held from 11-15 December 1995 at PGRC, Peradeniya. The symposium was inaugurated by Hon. Bernard Soysa, Minister of Science, Technology & Human Resources Development in the presence of Mr. T. Aksesson, Charge d' Affairs of Embassy of Sweden. About 80 Scientists representing relevant institutions participated. Dr. Afzal Sher and Mr. Ronny Duel represented SAREC/ Sida at the seminar. The programme consisted of 27 technical papers by researchers and 7 keynote speeches by foreign speakers representing 6 countries in the region. Arrangements have been made to publish the proceedings of the symposium.

A public seminar on "Review of International Information on the Buffalo" based on the participation of 4 Sri Lankan scientists, - Prof. V.Y. Kuruwita, Dr. S. Mahalingam, Dr. H. Abeygunawarddena and Dr. S.S.E. Ranawana at the IVth World Buffalo Congress was held at NARESA on 24th March.

### **Buffalo Information Dissemination Programme - BF (Phase III)**

The main aim of this programme is the dissemination of research results and information generated during the last 11 years on the activities under Phases I & II of the research programme to farmers and relevant persons of the society. The activities carried out under this programme are mentioned below.

- **Publications**

The following publications were under preparation

- \* Compendium of Research Publications
- \* Book on Buffalo Production
- \* Handbook of Husbandry Practices

- **Continuing Education**

A participatory workshop with farmers was held in April 1995 to assess their own priority training needs for improved buffalo husbandry. A report has been prepared based on this programme to be used for farmers training courses in Kuliyaipitiya in the Coconut Triangle and Thambuttegama in Mahaweli System H.

A three-day training course for Veterinary Surgeons and Extension Officers on supplementary feeding strategies for small holder buffalo production systems was conducted in August 1995 at the Institute of Continuous Education of Dept. of Animal Production & Health at Peradeniya. Prof. Priyani E. Soysa Director General, NARESA gave the inaugural address.

- **Buffalo Information Centre**

A section of the library of the Department of Animal Production and Health (DAPH) at Peradeniya has been partitioned off, to house the above centre.

The services of a consultant - Mrs. P. Watanapongse, the Director of the Main Library of Kasertart University, Bangkok was obtained during 26th Nov.- 2nd Dec. 95 for the setting up of the centre. The report of the consultant has already been submitted with the recommendations.

- **Field Programmes**

These programmes were conducted at the following places.

- \* Mahaweli System H (Thambuttegama)
- \* Mahaweli System C (Giradurukotte)
- \* Coconut Triangle (Kuliyaipitiya, Bingiriya, Pannala)

At Thambuttegama, 8 model farms have been set up and improved management practices including feeding of Urea Mollasus Mineral Block (UMMB). At Girandurukotte a UMMB production unit was set up and one model farm unit was established at the livestock farm at Mahaweli Authority.

In the Coconut Triangle, 15 farmers have been trained and each provided with improved buffalo cows. Baseline surveys have been carried out in two areas and extension programmes have been designed to popularize buffalo production.

- **Public Awareness on Buffalo Production**

A programme to develop videos and scripts for TV and Radio broadcasting was initiated. A radio quiz programme for schools in the Central Province has been planned.

- **UMMB Production and Popularization**

Urea mollasus mineral block (UMMB) produced by sugar mollasus, rice bran, urea, cement etc. was introduced as a supplementary nutritional feed for buffalo. Arrangements were made to popularize this new feed among farmers at village level. A production unit was set up at the livestock farm of the Mahaweli Authority at Girandurukotte for the issue of UMMB to farmers and other institutes.

Several meetings were held with the Hon. Bernard Soysa, Minister of S,T & HRD and the the Hon. S. Thondaman, Minister of Livestock Development and Rural Industries on the large scale production of UMMB at industry level as a cost effective supplementary feed for dairy cattle. It was decided to carry out a feasibility study on this issue.

**International Contacts Fund**

Travel grants were awarded to 39 scientists to participate in international conferences. 20 seminars were organised for these scientists to share their experiences with other scientists/ public on their return.

Besides Sri Lankan scientists attending conferences abroad, a new activity was to sponsor international scientists to be the guests of important conferences in Sri Lanka. (Annual sessions of the Organization of Professional Associations of Sri Lanka, SAARC Expert Group Meeting, Regional Expert Group Meeting on the Medicinal and Aromatic Plants in Industrial Development, Annual sessions of the SLAAS)

**Urgent Spare Parts Fund**

Nine requests at a total cost of SEK 56,811 for spare parts were approved.

**Visit of Sida Delegation**

Dr. Afzal Sher and Mr. Ronny Duel visited Sri Lanka and had discussions with all the leaders of the projects funded by this programme during the period 6 - 16 December 1995. The purpose of the visit was to,

1. Monitor the progress of the projects
2. Make preparations for the next research corporation agreement
3. Participation in the Regional Symposium on Buffalo.
4. Discuss the details of the evaluation of Sida's programme in Sri Lanka.

### - Marine Science Research Programme

Six (6) ongoing projects were progressing well during the year. It has been suggested to have a concluding seminar on the research work completed under phase I and phase II of the programme.

### Coastal Ecology programme

A project on "Research on Natural Resources Management in the Coastal Environment of Sri Lanka" funded by Sida was carried out by University of Ruhuna and National Aquatic Resources Agency (NARA) during the year. Under this project studies continued on the following areas :-

pelagic productivity, plankton, fish population dynamics, small pelagic fisheries and fish resources, coastal reefs of southern coast, socio-economic study of the coastal communities in the Hambantota District, oceanographic studies and pesticide residues in water and organisms.

### \* Commonwealth Science Council

Sri Lanka was appointed to the Executive Committee at the 18th Biennial Meeting in June 1995 at Bangalore, India. NARESA as the National CSC member for Sri Lanka has recommended a project proposal for the establishment of an Engineering Design Centre (EDC) in the Faculty of Engineering of the University of Peradeniya.

The Engineering Design Centre (EDC) would facilitate Sri Lanka to define its own products for home consumption and export. Additionally, by generating new education and training materials through its researchers, bringing in visiting experts and running short courses in specialist topics, the EDC will contribute strongly to the Government's aim for increased human capital through training and skill development.

It is proposed that the EDC will have satellite sub-centres at the University of Moratuwa, National Engineering Research Design (NERD) Centre and Ceylon Institute of Scientific and Industrial Research (CISIR).

A team of experts from the Commonwealth Secretariat visited Sri Lanka during August 1995 and several discussions were held to accelerate the project. The Ministry of Science, Technology & Human Resources Development coordinated the project through NARESA, and a paper is under preparation.

★ **South Asian Association for Regional Cooperation (SAARC)**

The following two reports were compiled and submitted to the Ministry of Science & Technology and Human Resources Development, to be forwarded to the SAARC secretariat according to the decision taken at the 12th meeting of the SAARC Technical Committee.

- The Directory of Scientific and Technological Activities of Sri Lanka
- The SAARC State-of-the-Art report on selected Rural Technologies: Food Processing Technologies and Handicrafts

★ **Asian Development Bank (ADB)**

NARESA gave assistance to the project funded by Asian Development Bank titled "Scientific and Technical Personnel Development in Sri Lanka" (TA No 2278-SRI). The objective of the project was to prepare a plan to upgrade and expand the human resources in the S & T sector to accelerate the absorption of new technologies and the process of industrialization of Sri Lanka. The Education Consultants India Ltd. implemented the project. The following officers were released to work with the consulting team. Mr. B.M.C.K. Basnayaka as the Local Coordinator, Mrs. R.P. Sugathadasa as the Statistician. The project was carried out from 23rd of November 1995 to 23rd of February 1996.

**13.0 SCIENCE POLICY**

Recognising the role that scientists and technologists can play in economic and industrial development, the Honourable Minister of Science & Technology and Human Resources Development appointed a Ministerial Committee on Science and Technology Policy with the Board of the Natural Resources, Energy and Science Authority and selected members from the scientific community. This Committee which was chaired by Prof. Priyani E. Soysa, the Director General of NARESA was mandated to formulate a S & T policy and a national plan of action to develop and foster science and technology activities in Sri Lanka. The task of the committee was (1) to examine past and existing S & T policies and policy initiatives and make recommendations for Science and Technology Policy to be adopted by the Government (2) to prepare an Action Plan to identify strategic activities to be undertaken by the Ministry of S & T and HRD and its institutions. The Board invited Dr. S. Liyanage (Senior Lecturer, Technical Management Centre, Univ. of Queensland, Australia) and Ms. Marina Wijesekera to assist in preparing a draft for discussion. Several Committee Meetings were held thereafter.

The final draft was prepared and discussed at a meeting with the scientific community. The modifications suggested at this meeting were incorporated into the report and the draft was discussed with the Hon. Minister of S & T and HRD on 14 August 1995. The final report was presented by the Committee to the Hon. Minister on 5 October 1995, which was presented to Her Excellency the President at Temple Trees on 18 October 1995, by the Hon. Minister, Bernard Soysa, Prof. Priyani Soysa, the Board members and the secretary to the Ministry of S & T and HRD, MR. H.A. Wimalagunawardane.

#### 14.0 STAFF TRAINING

##### \* Training Under SAREC Project on S & T Information

Computer training on Dbase, Windows, and Networking was provided to the staff officers, at the Institute of Computer Technology, University of Colombo. The main objective of organising this was to train the officers to use the S & T information network which was planned to be in full operation in 1996.

An Engineering Assistant Mr. Namal Prasanna Kumara qualified on computer networking was recruited on contract basis for the development of the computer network.

- \* Under the graduate training programme, initiated by the Ministry of Youth Affairs, Sports and Rural Development, NARESA provided on-the-job training to three graduates during the year 1995. They were able to get actively involved in the work of NARESA during this period and get first hand experience in the working environment of a leading scientific institution in the country.

- \* Mr. R.M.W. Amaradasa, Director Scientific Affairs was sent by NARESA for a training programme on "Science and Technology Policy Analysis" at the Science Policy Research Unit of the University of Sussex in the United Kingdom. This programme which commenced in October 1995 will end by the end of March 1996.

#### 15.0 PRESENT FINANCIAL STATUS

##### Consolidated Funds

The estimate for the consolidated funds for the year 1995 was Rs. 22,138,000/-. Only Rs. 5,800,000/- was approved originally by the Treasury. Subsequently by the intervention of the Hon. Minister of Science Technology and Human Resources Development, an allocation of Rs. 21,800,000/- was granted.

In June 1995, a 10% cut was imposed on low priority continuation Capital Expenditure Projects. This cut did not affect the vote for Research & other Scientific Work which amounted to Rs. 17,775,000/-.

The approved Foreign Aid Estimate for the year 1995 was Rs. 26,700,000 and the approved Recurrent Estimate was Rs. 18,000,000/-. In May 1995 a 20% cut was imposed on few items of the Recurrent Budget.

**16.0 SPECIAL MEETINGS WITH THE HON. MINISTER OF SCIENCE, TECHNOLOGY & HUMAN RESOURCES DEVELOPMENT AND OTHER OFFICIALS - 1995**

1. 17-03-95 Parliament Consultative Committee Meeting on Science, Technology & Human Resources Development
2. 21-04-95 - do -
3. 16-06-95 10th Meeting of the Committee on Public Enterprises. Meeting at the Parliament.
4. 27-06-95 Discussion with regard to the draft estimates (proposals) - 1996
5. 20-08-95 Parliament Consultative Committee Meeting on Science, Technology & Human Resources Development
6. 23-08-95 Working Committee on the use of research findings - Meeting at the Ministry Science, Technology & Human Resources Development
7. 20-10-95 Parliament Consultative Committee Meeting on Science, Technology & Human Resources Development
8. 20-12-95 - do -
9. 22-12-95 Consultants Committee on Science, Technology & Human Resources Development - Meeting held at the Ministry of Science, Technology & Human Resources Development

Three Inter-Ministerial meetings were held with the Hon. S. Thondaman, Minister of Livestock Development & Rural Industries, during the year 1995.

## 17.0 SIGNIFICANT RESEARCH FINDINGS

- \* Determination of the virulence factor in food isolates of *Listeria*

38 isolates of *Listeria monocytogenes* obtained from pasteurized milk, ice cream, raw milk, chicken and vegetables were tested for the production of listeriolysin ( a haemolysin) which has been identified as the true virulence factor of *L.monocytogenes*

A qualitative test using Cholesterol oxidase incorporated blood agar was used to determine the production of haemolysin by *Listeria* isolates. Haemolysis was produced by all isolates which is an indicator of haemolysin production. This test helps in identifying the virulent strains of *L. monocytogenes* in routine work.

The same isolates were subjected to quantitative determination of haemolysin production, by using the partially purified toxin. The isolates produced haemolysin with a titer ranging from 16-128 haemolytic units.

The tested food isolates were found to be producers of the true virulence factor listeriolysin which is a haemolysin. (RG/94/BT/01 - Dr. (Mrs) C.P.Kodikara and Prof. S. Widanapathirana)

- \* Modelling of Immunological Reactions

Several authors have reported the appearance of "hook" in one-step sandwich immunoassay for measurements of serum prostate specific antigen (PSA) and other analytes. In most of the reports commercially available one-step sandwich immunoassay kits were evaluated. In some of the technical reports one-step sandwich immunoassay kits were compared with its two-step mode or with an alternative immunoassay technique in assay response at high analyze concentrations. The "hook" is exhibited for immunoassay kits consisting of radio, enzyme or fluorescent labels as the signal generating antibody.

One step (simultaneous) sandwich immunoassay is a rapid assay method. However, this assay mode suffer from "hook" effect. According to previous reports, one-step assay gives rise to aberrant results for specimens irrespective to analyte and antibody characteristics.

The aim of our brief description is to pinpoint the inherited "hooked" nature in one-step sandwich immunoassay. The "hook" can be shifted to higher analyze concentrations to avoid misleading results for specimens. As this phenomenon is related to serious medical implications more studies need to be established to circumvent this analytical problem.

A single integrated computer program has been developed to simulate the analyte and antibody characteristics. To the best of my knowledge, there is no such program available to understand such fundamental immunological reactions. For example, it will be noted that the improved computer program has many options to simulate the one-step assay design. (RG/93/BT/03 - Dr. S.A. Fernando)

\* **Validity of an in vitro screening method for potato cyst nematode infection using different potato strains**

The estimation of the host-pathogen interaction of golden cyst nematode (*Globodera rostochievsis*) and different potato (*Solanum tuberosum* L.) varieties can be clearly identified using in vitro cumulative hatchability level of nematode eggs with the given incubation period.

The results of the study can be used to show the uneven chemo-effectivity of host root exudates which has clearly illustrated different values of the rate of emergence of second stage larvae of different genotypes of potato. (RG/94/BT/2 - Dr. N. Iddagoda, Mr. K.D.N. Jayawardena, Mr. G.R. Wahalatantrige).

\* **Infective Oesophagitis in Transplant Patients in Sri Lanka**

Superficial candida infection is a significant problem in kidney transplant patients in Sri Lanka. A firm diagnosis has to be made by demonstrating organisms in the tissues microscopically.

HSV (Herpes simplex virus) and *Helicobacter pylori* infection is not common in Sri Lankan patients. Although there were evidence of cytomegalo virus (CMV) infection or reactivation in transplant patients, CMV did not appear to be associated oetiologically with esophagitis.

Therefore it can be reasonably concluded that there is a place for antifungal treatment in kidney transplant patients specially when they have recent onset upper gastrointestinal symptoms. (RG/94/M/01/ - Prof. Dayasiri Fernando and Dr. Amal Priyantha)

\* **Bacterial Aetiology of Pneumonia in Children with Special Reference to the Prevalence of *Staphylococcus aureus* Infection**

Nasopharyngeal aspirates which are screened microscopically are superior to sputa for the isolation of bacterial respiratory pathogens. *Pneumococcus* and *Haemophilus influenza* are the 2 major respiratory pathogens isolated from children with pneumonia. *Staphylococcus aureus* is a rare cause of childhood pneumonia in the group studied. Although Penicillin remains the drug of choice for the treatment of pneumococcal pneumonia, ampicillin resistance of *H. influenza* means that an alternate drug, useful in the treatment of both these bacterial pathogens should be considered in the immediate management of childhood pneumonia. Although antigen detection is a promising method for the aetiological diagnosis, inconsistencies between isolation of an organism and detection of its antigen requires further study. The detection of staphylococcal antigen by CIE using antisera to a crude cell wall antigen gave very promising results. This method of diagnosis in deep seated *S. aureus* infection is worth pursuing, particularly in countries where bacteriological facilities are inadequate. (RG/91/M/05 - Dr. V. Thevanesam)

\* **Investigation of pulmonary disease for mycotic disease with special reference to histoplasmosis**

The study presents the first conclusive evidence for the presence of pulmonary histoplasmosis in this country. The grantee states that it has been difficult to convince physicians treating pulmonary tuberculosis that some of these patients may indeed be suffering from pulmonary histoplasmosis and not tuberculosis. At all stages of the disease, the radiological appearance is essentially similar to pulmonary tuberculosis and can only be differentiated from it by proper serologic and culture procedures. Clinically too, this disease resembles pulmonary tuberculosis very closely and as such can be mistaken for tuberculosis. (RG/89/M/04 - Dr. Maya Attapattu)

\* **Preparation and standardization of a set of evaluation sheets for the purpose of developing and evaluating the pre reading abilities of yr. 1 students**

A set of evaluation sheets which can be used to measure the pre-reading abilities of the year 1 students with a view to improving the quality of the language ability of students at primary education level have been prepared as the outcome of this research project. This set of evaluation sheets is useful in determining the take off point for instruction, comparison of reading ability of the students

of the class with national standards, comparison of the standard of reading ability among the students within the class, measurement of the progress in reading ability and recognizing the reading difficulties in each child. (RG/92/SS/14 - Mrs. C. Samarasinghe)

- \* **The origin of the preservation of traditional oral knowledge from the palm leaf manuscripts and the art of writing**

This research has resulted as a review of when, why and how oral traditions in the earliest period was transformed in the later periods to written words on palm leaf manuscripts, for the preservation of knowledge. It provides explanations as to why oriental people (specially scholars) continue the oral tradition of knowledge today, in this period of satellites, even though many of the palm leaf manuscripts and printed books are available. (RG/92/SS/12 - Mr. A. Lagamuwa)

- \* **Ambient air quality study of the pollution caused by vehicular exhaust emissions in the city of Colombo**

Concentrations of particulate matter (Total Suspended Particulates (TSP) and Fine dust (FD), lead (Pb), Poly Aromatic Hydrocarbons (PAHs), CO, SO<sub>2</sub>, Total Hydrocarbons (THC), Non-methane Hydrocarbons (NMHC), Methane (CH<sub>4</sub>) in the air were monitored on a regular basis at seven selected intersections in the city of Colombo using standard methods available. Whenever necessary primary climatic data such as humidity, rainfall, wind speed were recorded. During the period of sampling, passing traffic counts were taken using tally counters.

Analysis was carried out using above data to obtain a relationship between traffic data and pollutant levels along with primary climatic data. Attempts were made to show the degree of pollution with the ambient air quality standards available in other countries in the region and World Health Organization (WHO).

The results indicated that the vehicular traffic found in major roads of the city were high and it was above 35000 during day time (6 am\_6 pm). The related pollutants like TSP and NMHC were found to be occurring at higher levels and exceeded the standards of WHO and standards of USEPA respectively. The TSP levels are relatively higher than that found in the region. Data on fuel consumption shows that the diesel to petrol consumption ratio is 3:1 and this could be one of the main reasons of existence of high levels of suspended particulate matter. Traffic congestions due to inadequacy of wider roads too contribute to such high levels. To reduce such levels by 50 percent of present values, regulatory procedures are required to be

implemented. Control of traffic flow pattern that prevail in the city will be helpful to reduce these levels.

The pollution by Pb, SO<sub>2</sub> has some effects and it is likely to impair the urban air quality. The CO concentration existed at low levels which was indicated by its average 4ppm while CH<sub>4</sub> was uniformly distributed in the ambient air of the city.

As the vehicle population in the country is increasing day by day, the above levels in the air could be increased to a condition hazardous to humans unless proper vehicle emission regulations are implemented. (RG/89/C/09 - Dr. J.A.P. Mathes , Prof. H.D. Gunawardhana and Mr. A.W.J. Karunasinghe)

\* **Induction of Ovarian Activity in Postpartum Anestrous Buffaloes**

Seasonal calving and low calving rate have been identified as two major factors which limit the productivity of buffaloes in Sri Lanka.

This project was aimed to test the effectiveness of various hormonal preparations in inducing estrus in anestrous buffaloes and subsequent pregnancy rates (on-station and on-farm trials) and to study the characteristics and hormonal profiles of induced estrus.

The result of this study suggest that short term progesterone treatment in conjunction with PMSG appear to be very promising in inducing estrus and improving the pregnancy rate in indigenous buffaloes. However, more studies are needed to determine the factors which affect the success rate in order to improve the efficiency of treatment. Further, time sequences in relation to implant removal, LH surge, ovulation and estrus need to be determined precisely in order to use this treatment. (SAREC/09/BF/58 - Dr. H. Abeygunawardena and Prof. V. Y. Kuruwita)

\* **Aetiopathology of buffalo calf mortality in Sri Lanka**

The objective of this study was to identify the aetiology and the pathogenesis of the diseases responsible for calf mortality. Analysis of data from institutional buffalo farms have also reported that around one fifth of the buffalo calf population do not survive beyond 6 months of age.

Buffalo calves managed in institutional farms and in small holdings were monitored by periodic visitations.

The animals were examined clinically and relevant materials collected were tested in the laboratory eg. faecal and swabs samples. It was revealed that mortality was mainly caused due to the diseases like nematode infection by *Toxocara vitulorum* & *T. strongyl* and *Trichostrongyl sp*, and coccidiosis by *coccidia sp.* and pneumonia by *Pasteurella sp.* (SAREC/09/BF/33 - Prof. S.G.de S. Wettimuny and Dr. N. U. Horadagoda)

\* **Haematological and biochemical profiles of the Lanka buffalo**

Blood collected from 80 clinically healthy female buffaloes in the research farms at Narangolle and Peradeniya were used for the study. It was found that the average size of erythrocytes similar to cattle, low icterus index, conspicuous erythrocyte sedimentation rate, absence of reticulocytes and predominance of lymphocytes over neutrophils. This is a prominent haematological characteristic.

120 female buffaloes were tested for serum biochemical constituents and the results indicated that the ALT (alamine amino transminare) values in the buffalo were higher than the levels reported for other domesticated ruminants. This also reflects a species characteristic. Generally, the results were similar to those reported for swamp buffaloes in Australia.

Urine analysis of 33 void samples were clear, amber in colour and contained several types of casts including hyaline, granular and waxy casts as well as calcium carbonate, calcium oxalate, ammonium urate and uric acid crystals.

The results of this study have provided baseline data on a wide range of haematological parameters and biochemical constituents of the Lanka buffalo blood which could be used as reference values for interpretation of data from clinical and experimental investigations. (SAREC/09/BF/29 - Dr. N.U. Horadagoda)

**TABLE I : GRANTS SPONSORED BY NARESA**

Status Summary: During 1995

Discipline Status	Agriculture & Animal Husbandry	Biological Sciences	Chemical Sciences	Energy	Information Sciences	Medical, Veterinary & Dental Sciences	Physical & Engineering Sciences	Social Sciences	Biotech- nology	Science Education	Natural Resources
Total No. of grants operating during 1995	04	20	21	04	01	29	14	19	14	04	01
Grants awarded - 1995	04	12	14	01	-	24	08	04	10	02	01
Amount allocated for 1995 (New and ongoing Rs.)	1055000	3064370	2679000	417438	-	4370415	2959700	202470	2233100	238000	27555
Grants completed - 1995	02	08	05	-	-	06	02	04	02	-	-
Grants withdrawn - 1995	-	-	01	-	-	-	-	-	-	-	-
Grants terminated - 1995	01	-	01	-	-	-	01	-	-	-	-
RA's appointed - 1995	01	05	05	02	-	02	04	-	04	01	-
Registered for PG - 1995	-	04	03	01	-	01	-	03	03	01	-
Thesis PG - 1995	-	-	01	-	-	01	-	02	-	-	-
New Applications - 1996	06	03	09	02	02	22	12	06	02	-	-
Funds requested for 1996 (Rs.)	3112900	1435240	3181850	1197200	100000	10780510	4447915	615420	1377304	-	-
Grants approved for - 1996 (upto January)	-	-	02	-	01	03	03	Nil	-	-	-

TABLE II : GRANTS SPONSORED BY FOREIGN AGENCIES

Status Summary During 1995

Foreign Agency/Discipline Status	SAREC Buffalo Research Programme	SAREC Coastal Ecology Research Programme	SAREC Renewable Energy & Energy Efficiency	ODA-Flora of Sri Lanka Project
Total No. of grants operating during 1995	27	06	02	01
Grants awarded -1995	01	02	-	-
Amount allocated for 1995 (New and ongoing Rs.)	2.8m	2.87m	2.52m	1600000
Grants completed - 1995	03	05	-	-
Grants withdrawn - 1995	-	-	-	-
Grants terminated - 1995	03	-	-	-
RA's appointed - 1995	03	02	-	-
Registered for PG - 1995	02	02	02	01
Thesis PG - 1995	-	-	-	-
New Applications - 1996	-	-	-	-
Funds requested for 1996 (Rs.)	-	-	-	-
Grants approved for - 1996 (up to January)	-	-	-	-

NEW GRANTS AWARDED IN 1995

Discipline - Agriculture & Animal Husbandry

Grant No.	Grantee/Institution	Title & Duration	Total Allocation Rs.
RG/95/Ag/1	<p>Dr L. Nugaliyadde Rice Research &amp; Development Institute Batalagoda Ibbagamuwa.</p> <p>Dr (Mrs.) J. Edirisinghe Dept. of Zoology Univ. of Peradeniya Peradeniya.</p>	<p>Improvement of integrated pest management in rice based on understanding biology and population ecology of paddy bug <u>Leptocoris cratorius</u>.</p> <p align="center"><b>03 years</b></p>	456000.00
RG/95/Ag/2	<p>Dr P.S.J.W. Seresinhe Dr R. Pathirana Fac. of Agriculture Univ. of Ruhuna Mapalana Kamburupitiya.</p>	<p>Use of doubled haploid methodology for the improvement of Rice for multiple soil stress factors.</p> <p align="center"><b>03 years</b></p>	1122500.00
RG/95/Ag/3	<p>Mr W.A.P. Weerakkody Dr B.C.N. Peiris Fac. of Agriculture Univ. of Peradeniya Peradeniya.</p>	<p>Environmental manipulation: A strategy to assure yield stability and the export quality of Tomato, grown during the rainy season.</p> <p align="center"><b>02 years</b></p>	162500.00

Grant No.	Grantee/Institution	Title & Duration	Total Allocation Rs.
RG/95/Ag/4	<p>Mr I.N. Samarappuli Dr L.M.K. Tillekeratne RRISL, Agalawatta.</p> <p>Dr K.G.K. de Silva Head, Dept.of Polymer Chemistry RRI, Telawala Road., Ratmalana.</p>	<p>Future direction of rubber wood industry in Sri Lanka, supply and demand, technology, constraints and investment opportunities</p> <p><b>1 year</b></p>	230000.00

New Grants Awarded in 1995 (Biological Sciences)

Discipline

Grant No.	Name/Address	Project title/Duration	Total Allocation
RG/95/B/1	Mr K.B. Ranawana Dept. of Zoology Univ. of Peradeniya.	Gap regeneration in mangrove ecosystems. 2 years	Rs. 209,778/=
RG/95/B/2	Dr P. Dayaratne Mr D. Amarasekiriya NARA Crow Island Colombo 15.	A survey on the existing turtle hatcheries and mapping of the nesting beaches of turtles along the north-west, the west, the south and the south eastern coasts of Sri Lanka. 1 year	Rs. 90,000/=
RG/95/B/3	Dr (Ms) S. I. Abeygunawardena Prof. S. Widanapathirana Dr(Ms) CP Kodikara Dept. of Microbiology Univ. of Kelaniya.	Isolation, identification and establishment of a preserved collection of microbial cultures of general and industrial importance. 3 years	Rs. 540,500/=
RG/95/B/4	Dr Namal Priyantha Dept. of Chemistry Dr JP Edirisinghe Dr S. Wijekoon Dept. of Zoology Univ. of Peradeniya.	Integrated studies on biodiversity and water quality in an irrigated rice field ecosystems. 3 years	Rs. 686,360/=
RG/95/B/5	Prof. W.D. Ratnasooriya Dept. of Zoology Univ. of Colombo Dr Wipula Yapa NARSA. Dr P. Randeniya Dept. of Zoology Univ. of Colombo.	Ecology and biology of bats in Sri Lanka: A survey on the distribution of mega & micro - chiropterans in Sri Lanka. 3 years	Rs. 629,000/=
RG/95/B/6	Dr SRPP Karunaratne Dr(Ms) PH Amarasinghe Dept. of Zoology Univ. of Peradeniya.	Insecticide resistance in Anopheline vectors of malaria. 2 years	Rs. 625,600/=

RG/95/B/7	Dr M. Namasamy Prof. R. Namasamy K.A.Srikrishnaraj IFS Hantana Road Kandy.	Characterisation of mosquito midgut molecules modulating transmission of the malaria parasite.  2 years	Rs.526,500/=
RG/95/B/8	Dr PRT Gumarantunga Dept. of Fisheries Biology University of Ruhuna Matara.	Biology, ecology, population dynamics and breeding in captivity of endemic ornamental fish in river systems of Southern Sri Lanka.  3 years	Rs.669,000/=
RG/95/B/9	Dr N.Nilakarasam Dept. of Zoology Univ. of Ruhuna Matara.	Water quality management and disease control in endemic ornamental fish culture.  2 1/2 years	Rs.200,000/=
RG/95/B/10	Dr Gashid Seneviratne Mr E.M.J.M. Rizvi IFS Hantana Road Kandy.	Increasing rice yield through improved soil microbiological activities.  1 year	Rs.272,000/=
RG/95/B/11	Mrs A.M. Karunaratne Dept. of Botany Univ. of Peradeniya.	Developing a biocontrol method to protect coconut products from toxigenic fungi using edible microorganisms.  3 years	Rs.601,400/=
RG/95/B/12	Dr D.M.V.B. Dhanssekere Ms.SA Krishnarajah Royal Botanic Gardens Peradeniya.	Introduction of wild flora to the floriculture industry.  3 years	Rs.391,500/=

NEW GRANTS AWARDED IN 1995

Discipline - Biotechnology

GRANT NO.	GRANTEE/INSTITUTION	TITLE & DURATION	TOTAL ALLOCATION
RG/95/BT/01	Ms. Nalini H Alles CISIR	Development of processing Technology for the manufacture of organoleptically acceptable Soyabean Cheese  03 years	Rs. 394,800.00
RG/95/BT/02	Prof. J M R S Bandara Dept. of Agriculture Biology, Univ. of Peradeniya	Development of a Bean (Phaseolus vulgaris) plant resistant to Bean fly (Ophimoyia phaseoli) attack by the transfer of ICP gene from dipteran toxic Bacillus thuringiensis strain AB 6C  02 years	Rs. 340,000.00

<p>RG/95/BT/03</p>	<p>Prof. R Ramasamy I.F.S.</p>	<p>Anti-sense oligonucleotides for analysing functions of plasmodium falciparum proteins and as potential therapeutic for malaria  01 year</p>	<p>Rs. 50,000.00</p>
<p>RG/95/BT/04</p>	<p>Dr. Sriyani E Peiris Prof. H P M Gunasena Faculty of Agriculture Univ. of Peradeniya</p>	<p>Regeneration of Ebony and Satin using tissue culture techniques  03 years</p>	<p>Rs. 325,000.00</p>
<p>RG/95/BT/05</p>	<p>Mr. J Ranatunga Agro &amp; Food Technology Division, CISIR</p>	<p>Selection &amp; genetic improvements of Piper nigrum L. Cultivars for higher volatile oil &amp; Piperine content and their micro-propagation  03 years</p>	<p>Rs. 356,000.00</p>
<p>RG/95/BT/06</p>	<p>Prof. R Ramasamy Dr. P M Dharmasena I.F.S. Dr. S Gnaneshan Eastern University</p>	<p>Candidate Peptide and DNA vaccines for Falciparum Malaria - Synthesis and Immunogenicity in laboratory animals  02 years</p>	<p>Rs. 721,500.00</p>

RG/95/BT/07	Dr. Gaya R Ranawaka Division of Zoology Open University of Sri Lanka	Identification & Characterization of antigens on the infective stage of Wuchereria bancrofti  02 years	Rs. 97,250.00
RG/95/BT/08	Dr. Jennifer Perera Dept. of Microbiology, Faculty of Medicine Univ. of Colombo	DNA finger printing of M- tuberculosis using restriction fragment length polymorphism (RFLP) : Its using in the study of epidemiology of tuberculosis with special reference to the prison population  02 years	Rs. 489,604.00
RG/95/BT/09	Prof. L Mendis Dept. of Microbiology Faculty of Medicine Univ. of Colombo	The use of biotechnology for the rapid definitive diagnosis of selected viral infections and for the study of oncogenes in oral cancers  03 years	Rs. 702,000.00

RG/95/BT/10	Prof. U Samarajeewa Dept. of Food Science & Technology, Univ. of Peradeniya	A study on histamine production in fish and dried-fish and the effect of processing on histamine 02 years	Rs. 262,400.00
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New Grants Awarded in 1995

Discipline : Chemical Sciences

Grant No.	Name/Address	Project Title/Duration	Total Allocation Rs.
RG/95/C/02	Dr. Samitha P. Deraniyagala Department of Chemistry University of Sri Jayewardenepura Nugegoda	Determination of iodine in raw foods and its fate during cooking. 01 year	90000
RG/95/C/03	Dr. S.A. Fernando Department of Chemistry University of Colombo Colombo	Development of a low cost colorimeter and low cost analytical experiments for undergraduate teaching and research 01 year	65400
RG/95/C/04	Dr. R.D. Wijesekera Dept. of Chemistry Univ. of Colombo Colombo	A preliminary survey of the lead content in the blood of workers in garages and printing presses 01 year	55000

Grant No.	Name/Address	Project Title/ Duration	Total Allocation Rs.
RG/95/C/05	<p>Dr. (Mrs) A. Perera Dept. of Zoology Univ. of Colombo</p> <p>Dr. A.M. Mubarak CISIR Colombo 07</p>	<p>Pesticide residue trials on selected vegetable crops</p> <p>02 years</p>	238000
RG/95/C/06	<p>Dr. (Mrs) H.de Alwis Dept. of Chemistry Univ. of Colombo Colombo</p>	<p>Investigation of organic and inorganic constituents in the serum of Sri Lankan elephants</p> <p>02 years</p>	130000
RG/95/C/07	<p>Dr. Namal Priyantha Dept. of Chemistry Univ. of Peradeniya</p>	<p>Chemically modified electrodes for detection of clinically important compounds</p> <p>03 years</p>	408800

Grant No.	Name/Address	Project Title/Duration	Total Allocation Rs.
RG/95/C/08	<p>Prof. O.A. Ilepeurma Dr. R.P.J. Ranatunga Dept. of Chemistry Univ. of Peradeniya S. Kodituwakku Meteorology Department Colombo 07</p>	<p>Investigation of the extent of Air pollution in Sri Lanka through acid precipitation measurements  03 years</p>	711770
RG/95/C/09	<p>Dr. U.M. Senanayake Dr. G.M. Weerasekare CISIR, Colombo 07</p>	<p>Identification and chemistry in regard to mosquito repellent properties of different species of local plants such as Maduruthala etc.  1 1/2 years</p>	119400
RG/95/C/10	<p>Dr. J.H.M.U.L.B. Jayasinghe I.F.S., Kandy</p>	<p>Chemistry and bioactivity of glycosides of some Sri Lankan Sapindaceae and Combretaceae  03 years</p>	197500

Grant No.	Name/ Address	Title/ Duration	Total Allocation Rs.
RG/95/C/11	Dr. H. de Alwis Dept. of Chemistry Univ. of Colombo	Analysis of pesticide residues in vegetables and urine of pesticide sprayers 02 years	348000
RG/95/C/12	Mr. K.R. Dayananda CISIR Colombo 07	Investigation on adulteration of essential oils with special reference to citronella oil 1 1/2 years	203500
RG/95/C/13	Dr. E.R. Jansz Prof. A.M. Abeysekera Univ. of Sri Jayawardanapura	Laboratory Studies of bitter principles and debittering of palmyrah fruit pulp for new products 02 years	781000

Grant No.	Name/ Address	Title/ Duration	Total Allocation Rs.
RG/95/C/14	Dr. W.H.M.W. Herath Medicinal Research Institute Colombo 08	Isolation and characterization of new antibiotics from local fungi 02 years	150000
RG/95/C/15	Dr. M.S. Rupasinghe Prof. O.A. Ileperuma Mr. C.P. Udawatte I.F.S., Kandy	Chemical investigation and heat treatment on Sri Lankan geuda 02 years	186000

**New Grants Awarded in 1995**  
**Discipline - Medical, Veterinary and Dental Sciences**

Grant No.	Grantee/Institution	Title/Duration	Total Allocation
RG/95/M/1	Dr K. Buddhakorala Central STD Clinic De Saram Place P.O. Box 567 Colombo 10.	A study of preventive aspect of sexual transmission of STD/AIDS in a high risk population. 1 year	Rs.33,775.00
RG/95/M/2	Prof. Lalitha Mendis Dept. of Microbiology Faculty of Medicine Univ. of Colombo Kynsey Road Colombo 8.	A study of clinical epidemiological, diagnostic and molecular aspects of <i>Blastocystis hominis</i> . 3 years	Rs.432,000.00
RG/95/M/3	Dr Tara de Mel Dr Mangala Gunathilaka Dept. of Physiology Faculty of Medicine Univ. of Colombo Kynsey Road Colombo 8.	Investigation of mechanisms of nephrotoxicity in envenomed rabbits using the isolated perfused kidney. 2 years	Rs.184,850.00
RG/95/M/4	Dr R.S.B. Wickramasinghe Dr G.K.D. Karunartne MRI Colombo 8	The incidence, bacteriological aetiology and antibiotic susceptibility pattern of bacteriuria in pregnancy 1 year	Rs.25,000.00
RG/95/M/5	Prof. Manel Wijesundera Dept of Parasitology Univ. of Peradeniya Dr P.D.S.M. Gunawardana MRI Colombo 8.	Validation of Aedes larval surveillance against Aedes ovitrap surveillance for the monitoring of Aedes aegypti (Linnaeus) and Aedes albopictus (Skuse) populations in a Colombo suburb 4 months	Rs.50,865.00
RG/95/M/6	Dr Maya Attapattu MRI, Baseline Road Colombo 8	Determination of the immunological status of patients with dermatophytosis with special reference to cell mediated immunity 1 year	Rs.136,800.00

Grant No.	Grantee/Institution	Title/Duration	Total Allocation
RG/95/M/7	Dr K. Karunaratne Cancer Hospital Maharagama Dr M.R. de Silva MRI, Colombo 8	Detection and typing of Human Papillomavirus DNA in cervical intraepithelial neoplasia and carcinoma in a cohort of Sri Lankan women  1 year	Rs.75,000.00
RG/95/M/8	Dr Joachim Perera Dept of Anatomy Fac. of Medicine Kynsey Road, Colombo 8.	Hand injuries- Analysis of post traumatic functional integrity, in relation to aetiology, surgical pathology and initial management  2 years	Rs.94,650.00
RG/95/M/9	Prof. MK de S. Wijesundera Prof. J.S. Edirisinghe Dr D.J. Weilgama Dept of Parasitology Faculty of Medicine Univ. of Peradeniya Peradeniya	Study on strongyloides infection in man and its relationship to strongyloidiasis in toque (Macaca sinica) monkeys in Udawattakele, Kandy  2 years	Rs.122,600.00
RG/95/M/10	Dr PS Sannuganathan Dr Nimal Senanayake Dept of Medicine Univ. of Peradeniya Peradeniya.	Peradeniya Neuroepidemiology Project.  1 year	Rs.755,000.00
RG/95/M/11	Dr S. Wimalasundara Dept of Community Med. Univ. of Ruhuna Faculty of Medicine Galle.	Epidemiological study on visual defects and Amblyopia among school children  2 years	Rs.262,000.00
RG/95/M/12	Dr K.H. Tennekoon Dept of Physiology University of Colombo Dr S. Wasalathanthri Dept of Physiology Faculty of Medicine Univ. of Sri Jayawardenapura, Nugegoda.	A study on the duration of lactational amenorrhoea, lactational performance, lactational behaviour and endocrine profiles in lean and obese women.  3 years	Rs.1,428,150.00

Grant No.	Grantee/Institution	Title/Duration	Total Allocation
RG/95/M/13	Dr G.S.S.K. Colombage MRI, Baseline Road Colombo 8. Prof. L.N. Mendis Dept. of Microbiology Fac. of Medicine Univ. of Colombo Kynsey Road, Colombo 8.	Prevalence of Viral Hepatitis B, C and D markers among cancer patients receiving chemotherapy.  06 months	Rs.15,000.00
RG/95/M/14	Dr S. Gunasena MRI, Baseline Road Colombo 8. Prof. L.N. Mendis Dept. of Microbiology Fac. of Medicine Univ. of Colombo Kynsey Road, Colombo 8.	Prevalence of Hepatitis B virus serological markers in multi-transfused haemolytic anaemia children.  06 months	Rs.15,000.00
RG/95/M/15	Dr H. Peiris Dr R.J. Withana Dr G. Bennett Div. of Biochemistry Fac. of Medical Sciences University of Sri Jayewardenepura.	An establishment of a laboratory protocol for the estimation of fructosamine and the establishment of reference values for Sri Lanka.  3 years	Rs.285,100.00
RG/95/M/16	Dr Sriyani Ekanayake Div. of Parasitology Faculty of Medical Sciences Univ. of Sri Jayawardenapura Nugegoda.	Use of antigens of <u>Setaria digitata</u> adults for the development of a DOT - ELISA technique specific for bancroftian filariasis.  3 years	Rs.770,000.00
RG/95/M/17	Dr(Ms) JKP Wanigasuriya Faculty of Medicine Univ. of Sri Jayewardenepura. Nugegoda. Prof. R. Sheriff Fac. of Medicine Univ. of Colombo Kynsey Road, Colombo 8.	Nosocomial infections in the Intensive Care Unit and the Dialysis Unit - General Hospital Colombo.  1 year	Rs.63,500.00

RG/95/D/1	<p>Dr A.W. Ranasinghe Dr(Ms) A. Tilakaratne Dept. of Oral Medicine &amp; Periodontology Fac. of Dental Sciences Univ. of Peradeniya.</p>	<p>Periodontal status of pregnant women and women using hormonal contraceptives.  3 years</p>	Rs.141,335.00
RG/95/V/1	<p>Dr GSP De S. Gunawardana Dr M.B. Navaratne VRI, Gannoruwa Peradeniya.</p>	<p>Studies on Sarcocystosis in cattle and goats in Sri Lanka.  1 year</p>	Rs.91,400.00
RG/95/V/2	<p>Dr G.W.L. Jayawardana Dr GSP De S. Gunawardana VRI, Gannoruwa Peradeniya.</p>	<p>Isolation, identification and characterization of viruses causing economically important poultry diseases.  2 years</p>	Rs.223,000.00
RG/95/V/3	<p>Dr R.P.V.J. Rajapakse Dr N.U. Horadagoda Faculty of Vet. Medicine University of Peradeniya Peradeniya. Dr A.C.M. Faisal VRI, Gannoruwa Peradeniya.</p>	<p>Epidemiological study and control strategy of gastro intestinal parasites in Goats.  1 year</p>	Rs.283,600.00

New Grants Awarded in 1995

Discipline - Natural Resources

Grant No.	Grantee/Institution	Title & Duration	Total Allocation
RG/95/NR/1	Dr Jinadasa Katupotha Dept. of Geography Univ. of Sri Jayewardenepura Nugegoda	Landslides hazards caused by granite quarrying projects around Sooriyakanda in the Kolonna Divisional Secretariat area.  4 months	Rs 27555/=

Discipline - Physical, Engineering & Mathematical Sciences

New Grants Awarded in 1995

Grant No.	Name/Address	Title/Duration	Grand Total
RG/95/P/01	Dr. Jinadasa Katupotha Department of Geography University of Sri Jayewardenepura Nugegoda	Geological and economic significance of the gem- gravel deposits in the Hambantota district.  01 year	105100.00
RG/95/P/02	Dr K.P.S. Chandana Jayaratne Department of Physics University of Colombo Colombo -3	Research on lightning discharges characteristic to Sri Lanka, their interaction with power & telecommunication networks and the spatial distribution of ground flash density.  03 years	1298300.00
RG/95/P/03	Mr. K.R. Abeysinghe Bandara Department of Meteorology Colombo 7.	For an area of 100 km around Colombo: Identifying Damages to life and property by lightning discharges and developing a technique of forecasting movement of thunderstorms using wind field.  01 year	115000.00
RG/95/P/04	Prof. Kirthi Tennakone Institute of Fundamental Studies Hantana Road Kandy.	Microstructured semi- conductor photocatalysts for destruction of organic contaminants and removal of heavy metals in water.  03 years	815000.00

Grant No.	Grantee/Address	Title/Duration	Total Allocation
RG/95/P/05	Prof. H.M.N. Bandara Dr. R.M.G. Rajapaksa Dr. (Mrs.) A.D.L. Chandanie Department of Chemistry Prof. M.A.K.L. Dissanayake Dr. K. Premaratne Department of Physics University of Peradeniya Peradeniya	Development of novel materials and devices based on polymers/natural rubber, semiconductors and graphite for energy conversion, storage and other applications.  03 years	1314000.00
RG/95/E/01	Dr. P.N. Wickramanayake Mr. E.J.H. Corea Department of Civil Eng. University of Peradeniya Peradeniya	Viability of Anaerobic filters and Wetlands Systems for Sewage Treatment under Sri Lankan Conditions.  02 years	544600.00
RG/95/E/02	Dr. G.E. Amirthanathan Faculty of Engineering University of Peradeniya Mr. J.M.J.C. Jayalath Mr. J.P. Padmasiri National Water Supply & Drainage Board Getambe Peradeniya	Suitability of Dynamic Roughing Filters as Pretreatment systems for slow sand filters in Sri Lanka.  02 years	220000.00
RG/95/E/03	Dr. W.P.S. Dias Department of Civil Eng. University of Moratuwa Moratuwa	The Feasibility of using product models for representing building information.  02 years	160000.00

New Grants Awarded in 1995

Discipline - Science Education

Grant No.	Grantee/Institution	Title & Duration	Total Allocation
RG/95/SE/1	Mrs. A.M. Hettige Dty. Principal Ananda Balika Vidyalaya Maligakanda Road Colombo 10.	Principal's leadership qualities that contribute to teachers motivation and loyalty with special emphasis on science education.  02 years	Rs. 15,000.00
RG/95/SE/2	Dr. S.A Fernando Department of Chemistry University of Colombo Colombo	Development of a suitable teaching method on Environmental Pollution for tertiary level education.  02 years	Rs. 2,92,000.00

NEW GRANTS AWARDED IN 1995

Discipline - Social Sciences

Grant No.	Grantee/Institution	Title & Duration	Total Allocation Rs.
RG/95/SS/1	Dr S. Seneviratne Dept. of Philosophy & Social Sciences IFS Hantana Road Kandy.	The problem of metal resource use pattern in pre modern Sri Lanka: The Archaeometallurgy of the ore deposits at Panirendava and Vilagedara and in the adjacent regions  1 year	146150.00
RG/95/SS/2	Miss D.V.D. Abeygunewardene 55/15, Nutmeg Gardens Jail Road Galle.	Professional accountability for medical negligence in Sri Lanka- A comparative perspective  2 years	120900.00
RG/95/SS/3	Mr M.S. Wijesiri E.I.E.D. Division Mahaweli Authority 301, T.B. Jayah Mawatha Colombo 10.	Effective factors in success and failures of industrial parks with reference to experiences in North Central Province and North Western Province 1 year	8820.00
RG/95/SS/4	Dr P.S. Cooray Medical Officer Post Graduate Institute of Medicine 160, Norris Canal Rd., Colombo 8.	Foreign employment of mother and its impact on child's health and development  1 year	7500.00

New Grants Awarded in 1995

SAREC/Sida

Grant No	Grantee/Institution	Title & Duration	Total Allocation Rs.
Sida/95/GI/01	Dr Swarna Jayaweera CENWOR 12 1/1, Ascot Avenue Colombo 5	Incorporating gender issues in Research and Development programmes 11 months	232500/-

NATURAL RESOURCES ENERGY & SCIENCE AUTHORITY OF SRI LANKA

BALANCE SHEET AS AT 31.12.1992

AS At 31.12.92	RS.	RS.	RS.
<b>Funds Employed</b>			
NARESA Funds			
Add: Drawings from Treasury	( 14,513,826.31 )	( 14,203,826.31 )	( 18,033,338.71 )
	<u>310,000.00</u>	<u>310,000.00</u>	
Less: Excess of Expenditure over Income			
Documentation Unit Capital Fund	5,347,361.14	5,432,361.14	5,434,111.14
Add: Drawings from Treasury	<u>85,000.00</u>	<u>85,000.00</u>	<u>1,750.00</u>
Less: Expenditure	Note 1.1		
Research Grants Fund	6,232,755.70	6,232,755.70	
Add: Drawings from Treasury	<u>16,521,226.00</u>	<u>16,521,226.00</u>	<u>22,723,981.70</u>
Less: Net Expenditure	Note 1.2	<u>16,075,461.81</u>	<u>16,075,461.81</u>
Man & Biosphere Fund	1,953,028.22	1,953,028.22	6,678,319.59
Add: Drawings from Treasury	<u>123,000.00</u>	<u>123,000.00</u>	<u>2,078,028.22</u>
Less: Net Expenditure	Note 1.3	<u>127,150.90</u>	<u>1,950,877.32</u>
Miscellaneous Fund	841,240.14	841,240.14	
Add: Drawings from Treasury	<u>525,000.00</u>	<u>525,000.00</u>	<u>1,366,240.14</u>
Less: Net Expenditure	Note 1.4	<u>566,507.57</u>	<u>566,507.57</u>
	841,240.14		799,665.47

<p>153,497.94</p> <p>-----</p> <p>153,497.94</p> <p>-----</p> <p>153,497.94</p> <p>1,018,042.90</p> <p><u>200,000.00</u></p> <p>1,218,042.90</p> <p>[ 194,017.70 ]</p> <p>1,034,025.20</p>	<p>Scientific Manpower Project Fund</p> <p>ADD: Drawings from Treasury</p> <p>LESS: Expenditure</p> <p>Working Committee Fund</p> <p>ADD: Drawings from Treasury</p> <p>LESS: Net Expenditure</p> <p>Foreign Aid Fund</p> <p>ADD: Drawings from Treasury</p> <p>LESS: Expenditure</p> <p>Capital Reserve</p> <p><u>Current Liabilities</u></p> <p>Creditors</p> <p>Accrued charges</p> <p>Provisions</p> <p>Store Keeper Refundable Security Deposits</p> <p>Tender Deposits</p>	<p>153,497.94</p> <p>-----</p> <p>1,034,025.20</p> <p>-----</p> <p>59,390,478.85</p> <p><u>6,169,502.64</u></p> <p>( 8,725,418.79 )</p> <p>-----</p> <p>1,752,710.89</p> <p>1,266,285.56</p> <p>7,983,802.55</p> <p>3,201.34</p> <p><u>35,450.00</u></p>	<p>153,497.94</p> <p>-----</p> <p>1,034,025.20</p> <p>-----</p> <p>56,834,562.70</p> <p>-----</p> <p>42,250,000.00</p> <p>-----</p> <p>11,041,450.34</p> <p>108,143,369.29</p> <p>-----</p>
<p>54,408,594.45</p> <p>8,439,561.82</p> <p><u>8,974,585.00</u></p> <p>71,822,741.27</p> <p><u>(12,432,262.42)</u></p> <p>59,390,478.85</p>	<p>Foreign Aid Fund</p>	<p>59,390,478.85</p>	<p>56,834,562.70</p>
<p>42,250,000.00</p>	<p>Capital Reserve</p>	<p>42,250,000.00</p>	<p>42,250,000.00</p>
<p>245,446.83</p> <p>881,341.28</p> <p>2,887,096.00</p> <p>2,808.94</p> <p><u>9,450.00</u></p> <p><u>4,026,143.05</u></p> <p><u>10,714,703.93</u></p>	<p><u>Current Liabilities</u></p>	<p>1,752,710.89</p> <p>1,266,285.56</p> <p>7,983,802.55</p> <p>3,201.34</p> <p><u>35,450.00</u></p>	<p>11,041,450.34</p>







Fund Flow Statement - 1995

Sources

External

Contribution from the Government Rs. 17,566,226

Grants from Foreign Agencies Rs. 7,313,983

Less : 10% Administration Cost 1,144,481  
-----  
6,169,502

23,735,728

Add:

Items not involving the movement of Funds

Depreciation 3,097,958

Disposal of Fixed Assets 53,593

Less:

Depreciation written off 53,122  
-----  
471

3,098,429

Provisions (5,979,915)  
-----

(2,881,486)

20,854,242

Applications

Excess of Expenditure over income 1,568,684

Adjustment in respect of previous 355,420  
- year

Acquisition of fixed Assets 2,158,591

Expenditure re Research grants 20,555,897  
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24,638,592

(3,784,350)

Change in working Capital

	Increase	Decrease
1. Stocks	-	184,894
2. Debtors	1,647,695	
3. Prepayments	57,571	
4. Deposits	5,000	
5. Treasury Deposits	-	5,275,311
6. Creditors		1,507,264
7. Accrued Charges		384,944
8. Provisions	-	5,096,707
9. Other liabilities	-	26,392
10. Cash & Bank balance	6,980,896 ----- 8,691,162	----- 12,475,512 -----

Director General  
Natural Resources, Energy &  
Finance Authority of India  
11, 5, Maitland Place, New Delhi

(3,784,350)

NOTES ON ACCOUNTS

1. **General Accounting :** The Financial Statements have been prepared in accordance with generally accepted accounting principles on a historical Cost basis. The fundamental accounting assumptions and policies relevant in accounting have been adhered to on a consistent basis as in the previous year.

The ten percent of foreign donor funds received which is for covering overheads, has been taken credit in the Income and Expenditure Statement.

**1.1 Documentation Unit Capital Fund Expenditure:**

1. SLSTIC Equipment	Rs. 421,740.00
2. SLSTIC Books	<u>26,109.41</u>
	447,849.41
Less: Cost of Equipment and Books	<u>447,849.41</u>
	N I L
Add: Prior Year adjustments	<u>1,750.00</u>
	<u>Rs. 1,750.00</u>

**1.2 Research Grants Expenditure -**

Actual Expenditure for the Year	Rs. 10,950,152.17
ADD: Expenditure on Market Garbage Grant	<u>254,758.78</u>
	11,204,910.95
ADD: Provision for balance funds	<u>5,316,315.05</u>
	16,521,226.00
LESS: Prior Year adjustment	<u>445,764.19</u>
	<u>Rs. 16,075,461.81</u>

**1.3 Man & the Biosphere Expenditure**

1. MAB 86/01	RS.51,600.00
2. MAB National Committee	<u>75,550.90</u>
	<u>Rs.127,150.90</u>

**1.4. Miscellaneous Fund Expenditure**

1. Participation in International Scientific Work	-Rs.55,702.06
2. Seminars & Symposia	460,874.61
3. Special Publications	<u>50,000.00</u>
	<u>Rs. 566,576.67</u>

**1.5 Steering Committees Expenditure**

1. Agriculture & Animal Husbandry S/C	Rs. 19,052.00
2. Biological Sciences S/C	20,772.00
3. Bio-Technology S/C	20,918.25
4. Chemical Sciences S/C	16,711.00
5. Editorial S/C	17,722.00
6. Medical & Vet. Sciences S/C	26,340.00
7. Natural Resources S/C	24,367.95
8. Physical & Engineering Sciences S/C	15,367.82
9. Social Science Research S/C	31,551.00
10. Science Education S/C	19,166.48
11. Science & Technical Information S/C	7,360.00
12. Energy S/C	<u>11,732.50</u>
	<u>Rs.231,061.00</u>

**1.6. Sri Lanka Scientific & Technical Information Centre Expenditure**

1. Maintenance & repairs	Rs. 44,148.40
2. Periodicals	136,618.84
3. In house printing & Binding	65,579.15
4. Consumables	301,405.97
5. Miscellaneous	2,290.00
6. Publications & Publicity	<u>101,562.36</u>
	<u>Rs. 651,604.72</u>

**1.7. Foreign Aid Expenditure**

**SAREC**

SAREC Expenditure	Rs. 8,844,597 .79
Less: Money received from Sale of buffaloes	Rs. 188,339.00
	<u>8,656,258.79</u>
Add: Prior Year adjustment	<u>68,160.00</u>
	<u>RS. 8,724,418.79</u>
MAN/UNESCO Expenditure	<u>RS. 1,000.00</u>

## 2. Assets & the basis of their Valuation

### Depreciable assets & Depreciation

Depreciation has been provided on Original Cost or at valuation on a straight line basis Consistent with that of the previous year and is calculated to write off the assets over their estimated useful lives.

#### 2.1 Debtors

Total Debtors	Rs. 4,357,321.61
Less: Provision for doubtful debts	<u>345,543.78</u>
	<u>Rs. 4,011,777.83</u>

Provision has been provided for specific doubtful debt amounting to 327,092.21 and Cash Imprest given to Research Grantees which are due for more than 03 years, amounting to 18,451.57.

## 3. Liabilities

#### 3.1 Creditors

Creditors amounted to Rs. 1,752,710.89 represents monies held by NARESA as given below;

1. Sundry Creditors	Rs. 613,416.20
2. Staff Creditors	31,600.00
3. CSA A/C	115,020.07
4. Genetic Resources A/C CSC Funds	104,815.00
5. Mobile Science Exhibition A/C	7,991.46
6. RG/89/IS/03 a/c	65.75
7. Suspenses a/c	7,927.35
8. RG/95/MAf/a/c	<u>871,875.06</u>
	<u>Rs. 1,752,710.89</u>

#### 3.2 Employees Benefit

All Employees are covered by EPF and ETF except the National Apprenticeship Board Trainees. An approved Medical Scheme is provided in addition to the normal Welfare facilities available.

#### 3.3 Retiring Gratuity

Provisions have been made in the accounts in respect of liability for retiring gratuity.

Amount paid for the year -	<u>64,300.00</u>
Provision for the year	<u>RS. 663,600.34</u>

4. Publications for the value of Rs. 1,723,712.50

( valued at selling price) is available with us.

5. NARESA Owns . 20 vehicles , They are located as follows;

With NARESA - 11

With Research Grantees 09

20

=

6. Funds drawn from the Treasury during 1995

Consolidated funds Rs. 17,566,226.00

Recurrent Funds RS. 14,560,000.00

Foreign Aid Funds Rs. 12,589,295.00

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දුරකථන අංකය  
Telephone } 691151

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මගේ දුරකථන  
අංකය (ෆැක්ස්)  
Fax No. } 697451

මගේ දුරකථන  
අංකය (මගේ)  
My No. } EC/R/NARESA/F.A/95.

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අංකය (ඔබේ)  
Your No. }

විගණකාධිපති දෙපාර්තමේන්තුව  
නිදහස් වතුරළය, කොළඹ 7, ශ්‍රී ලංකාව

கணக்காய்வாளர் தலைமை அலுவலகத் திணைக்களம்  
கததிர சதுக்கம், கொழும்பு 7, இலங்கை

AUDITOR-GENERAL'S DEPARTMENT  
INDEPENDENCE SQUARE, COLOMBO 7, SRI LANKA

දිනය/திகதி/Date : 10 March 1997.

Director General,  
Natural Resources, Energy and Science Authority  
of Sri Lanka.

REPORT OF THE AUDITOR GENERAL ON THE ACCOUNTS OF THE  
NATURAL RESOURCES, ENERGY AND SCIENCE AUTHORITY OF  
SRI LANKA FOR THE YEAR ENDED 31 DECEMBER 1995 IN TERMS OF  
SECTION 14(2)(C) OF THE FINANCE ACT NO.38 OF 1971.

The audit of accounts of the Natural Resources, Energy and Science Authority of Sri Lanka for the year ended 31 December 1995 was carried out under my direction in pursuance of provisions in Article 154(1) of the Constitution of the Democratic Socialist Republic of Sri Lanka read in conjunction with Section 13(1) of the Finance Act No.38 of 1971. My observations which I consider should be published with the annual report of the Authority in terms of Section 14(2)(c) of the Finance Act appear in this report. A detailed report in terms of Section 13(7)(a) of the Finance Act was forwarded to the Director General of the Authority on 22 July 1996.

## 1:2. Scope of Audit

Audit opinion, comments and findings in this report are based on a review of the financial statements presented to audit and substantive tests of samples of transactions. The scope and extent of such review and tests were such as to enable as wide an audit coverage as possible within the limitations of staff, other resources and time available to me. Sub-sections (3) and (4) of Section 13 of the Finance Act give discretionary powers to the Auditor General to determine the scope and extent of the audit.

## 2. Accounts

### 2:1. Opinion

Subject to my comments appearing in this report, I am of opinion that the accounts presented have been satisfactorily prepared on the basis of generally accepted accounting principles applied on a basis consistent with that adopted in the preceding year.

### 2:2. Financial Results

The activities of the Authority are operated under General Fund and six Special Fund Accounts. According to the accounts furnished, the financial results arising out of the activities of the Authority's General Fund for the year ended 31 December 1995 was a deficit of Rs.16,792,285 as compared with the deficit of Rs.15,060,206 for the previous year, before taking into account the government grant for recurrent expenditure. The deficit for the year under review had decreased to Rs.2,232,285 after taking into account the government grant of Rs.14,560,000 received for recurrent expenditure. The deficit for the previous year had decreased to Rs.4,789,206 after taking into account the government grant of Rs.10,271,000 received for recurrent expenditure.

The financial results arising out of the special funds was a deficit of Rs.25,494,609 before taking into account the government grant and foreign aid for activities of the special funds as compared with a deficit of Rs.17,776,129. The deficit for the year had decreased to Rs.2,067,130 after taking into account the government grant (including foreign aid and prior year adjustments) of Rs.23,427,479 received for the activities of the special fund for the year under review as against the surplus of Rs.5,124,567 for the previous year, after taking into account the government grant (including foreign aid) of Rs.12,651,562 received for the activities of the special fund for the previous year.

2:2:1. General Fund

A summary of the financial results of the general fund for the year under review and the previous year is given below :

	Year ended 31 December			
	1995		1994	
	Rs.	Rs.	Rs.	Rs.
<u>Income</u>				
Receipts regarding foreign aid				
administration cost	1,144,481		897,766	
Sale of publications	284,805		282,999	
Interest on loans	137,672		106,480	
Providing printing services to outsiders	184,640		165,104	
Receipts from photocopies	5,797		9,968	
Miscellaneous	117,153		147,068	
Profit on sale of fixed assets	38,046		420	
Investigation income received from outside activities	21,492	1,934,086	-	1,609,805
	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>Expenditure</u>				
Office administration	7,813,403		9,635,720	
Staff salaries	8,992,977		6,981,863	
Board of control	131,078		52,428	
Others	1,788,913	18,726,371	-	16,670,011
	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
Deficit before government grant		(16,792,285)		(15,060,206)
Less : Government grant for recurrent expenditure		14,560,000		10,271,000
		<u>          </u>		<u>          </u>
Deficit for the year		(2,232,285)		(4,789,206)
Fund balance brought forward	(14,513,826)		(9,692,818)	
Prior period items	(1,597,228)		(379,802)	
Grant received from the Treasury	310,000	(15,801,054)	348,000	(9,724,620)
	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
Fund balance carried forward		(18,033,339)		(14,513,826)
		<u>          </u>		<u>          </u>

2:2:2. Special Fund

A summary of the financial results of each special fund for the year under review and the previous year is given below.

	Year ended 31 December			
	1995		1994	
	Rs.	Rs.	Rs.	Rs.
<u>Research grants fund</u>				
Government grant	16,521,226		2,718,000	
Less : Expenditure	16,075,462		2,700,856	
Surplus		445,764		17,144
<u>Documentation unit Capital fund</u>				
Government grant	85,000		470,000	
Add/(less) Expenditure (Prior year adjustments)	1,750		(409,399)	
Surplus		86,750		60,601
<u>Foreign aid fund</u>				
Receipts of foreign aid	6,169,503		8,439,562	
Treasury deposits	-		8,974,585	
	6,169,503		17,414,147	
Less : Expenditure				
Surplus/(Deficit)	8,725,419	(2,555,916)	12,432,262	4,981,885
<u>Man and biosphere fund</u>				
Government grant	125,000		255,000	
Less : Expenditure	127,151		208,537	
Surplus		(2,151)		46,463
<u>Miscellaneous funds</u>				
Government grant	525,000		569,000	
Less : Expenditure	566,577		566,508	
Surplus/(Deficit)		(41,577)		2,492
<u>Working committee fund</u>				
Government grant	-		200,000	
Less : Expenditure	-		184,018	15,982
(Deficit)/Surplus		(2,067,130)		5,124,567

2:3. Financial Structure

According to the accounts presented, the financial structure of the Authority as at 31 December 1995 as compared with that as at 31 December 1994 is given below :

	<u>As at 31 December</u>	
	<u>1995</u>	<u>1994</u>
	Rs.	Rs.
<u>Resources</u>		
Capital reserve	42,250,000	42,250,000
General fund of the Authority	(18,033,339)	(14,513,826)
<u>Special funds</u>		
Foreign aid fund	56,834,563	59,390,479
Research grants fund	6,678,520	6,232,756
Documentation unit capital fund	5,434,111	5,347,361
Man and biosphere fund	1,950,877	1,953,028
Miscellaneous funds	799,664	841,240
Working committee fund	1,034,025	1,034,025
Scientific manpower project fund	<u>153,498</u>	<u>153,498</u>
	97,101,919	102,688,561
	=====	=====
<u>Utilization</u>		
Fixed assets (at written down value)	53,678,901	55,481,194
* Net current assets	<u>43,423,018</u>	<u>47,207,367</u>
	97,101,919	102,688,561
	=====	=====

2:4. Source and Application of Funds

The source and application of funds of the Authority during the year under review as compared with that of the preceding year is given below.

Source	Year ended 31 December					
	1995			1994		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Deficit for the year		(2,232,285)				
Adjustments for items not involving movement of funds						
Add :						
Depreciation	3,097,959					
Provisions for retirement gratuity	663,600					
Adjustments for profit on sale of fixed assets	(21,492)	3,740,067				
		1,507,782				
Less :						
Prior period items	(1,597,228)					
Prior years adjustments added to special fund	1,750					
Depreciation adjustments for fixed assets	862,454	(733,024)	-	-	-	
Funds generated from operations			774,758			
Other Sources						
Government contribution for special funds and general fund		17,566,226			4,560,000	
Proceeds from sale of fixed assets		21,964			420	
Receipt of foreign aid for research activities		6,169,503	23,757,693		17,414,147	
			24,532,451			21,974,567

<u>Application</u>			
Deficit for the year			(4,789,206)
Adjustments for items not involving movement of funds			
<u>Add/(Less)</u>			
Depreciation	-	3,705,292	
Provision for retirement gratuity	-	125,169	
Adjustments for profit on sale of fixed assets	-	(420)	3,830,041
			<u>(959,165)</u>
Prior period items			<u>(379,802)</u>
			<u>(1,338,967)</u>
<u>Add:</u>			
Fixed assets increase/(decrease)	(2,158,591)		740,413
Payment of gratuity	(64,300)		-
Expenditure regarding research activities	(25,494,609)	(27,717,500)	<u>(16,501,579)</u> <u>(17,100,133)</u>
Increase/(Decrease) in working capital as analysed below		<u>(3,185,049)</u>	<u>4,874,434</u>

Effect on Working Capital

Increase/(Decrease)

	<u>1995</u>	<u>1994</u>
	Rs.	Rs.
Debtors	1,647,695	242,216
Stock	(184,894)	388,800
Pre-payments	57,571	(362,817)
Deposits	5,000	3,500
Treasury deposits	(5,275,311)	6,680,219
Bank balance	(11,894,305)	4,660,120
Cash imprest	2,500	(1,000)
Cash in hand	18,872,701	(9,538,282)
Creditors	(1,507,264)	316,743
Accrued expenses	(384,944)	2,097,192
Provision	(4,497,406)	381,760
Security deposits	(392)	4,483
Tender deposits	(26,000)	1,500
	<u>(3,185,049)</u>	<u>4,874,434</u>

2:5. Comments on Accounts

2:5:1. Accounting Policies

Provision for bad debts had been made in respect of Rs.327,092 receivable from the Ministry of Science, Technology and Human Resources Development. The Director General had informed that the Board of Control had decided to write off this amount treating this as irrecoverable.

2:5:2. Accounting Deficiencies

Following accounting deficiencies were observed.

- (a) Difference in the trial balance amounting to Rs.7,927 had been credited to a suspense account. This had been shown as a credit balance instead of showing it separately in the balance sheet till it is identified.
- (b) Recurrent expenditure relating to several expenditure items aggregating Rs.34,670 had been charged to sundry expenditure account in 5 instances instead of being charged to individual expenditure accounts.
- (c) Gratuity amounting to Rs.226,650 paid in respect of officers who had left the services of the Institute in previous years had not been charged to the provision for payment of gratuity account. As a result, provision for gratuity account had been overstated by a similar amount.
- (d) Provision had not been made for accrued expenditure amounting to Rs.37,112.
- (e) According to the ledger accounts, profit on sale of fixed assets amounting to Rs.21,492 had been shown as consultancy fees received from outside parties and consultancy fees amounting to Rs.38,046 received from outside parties had been shown as profit on sale of fixed assets by erroneous transfers between the accounts.

2:5:3. Assets not Physically Verified

Fixed assets had not been physically verified during the year under review or as at the end of the year under review and the book value of fixed assets had been taken to accounts.

2:5:4. Unexplained Differences

According to the accounts, the value of Treasury deposits had been shown as Rs.34,538,692. However, the balance confirmed by the Treasury was Rs.31,392,645. The difference of Rs.3,146,047 had not been explained.

2:5:5. Lack of Evidence for Audit

Assets valued at Rs.10,901,851, debtors valued at Rs.2,806,973 and creditors valued at Rs.1,788,161 could not be satisfactorily vouched or accepted in audit due to non availability of board of survey reports, registers of fixed assets and confirmations.

2:5:6. Non-compliance with Laws, Rules, Regulations and Management Decisions

Following instances of non-compliance were observed in audit.

Reference to Laws, Rules, Regulations etc.

Particulars

(a) Finance Act.

(i) Section 13(5)(d)

The Authority had not determined the minimum internal audit programme in agreement with the Auditor General.

(ii) Section 13(6)

Annual accounts together with the report on accounts should be forwarded to the Auditor General within four months of the expiry of the year. However, the report on accounts had not been forwarded together with the accounts for the year 1995.

(b) Section 50 of the Turnover Tax Act No. 69 of 1981 and the gazette No.714/13 dated 14 May 1992

Turnover tax amounting to Rs.13,125 had not been recovered and remitted to the Commissioner General of Inland Revenue while making payments for security services of the Authority.

(c) Financial Regulations

(i) FR 396(d)

Proper action had not been taken in respect of 4 cheques valued at Rs.8,450 which were not rendered for payment although 6 months had lapsed from the date of their issue.

(ii) FR 371

Balance remaining out of the advances paid should be immediately returned to the institution once the work is over. However, imprest advances of Rs.7,799 paid to research officers remained unsettled for a period of 2 to 5 years.

(iii) FR 753(2)

Goods receipt notes in Form 219 should be issued for purchase of goods. However, goods receipt notes had not been issued at the receipt of goods in respect of computer spare parts (C.D. ROMs) amounting to Rs.455,973 purchased for the library.

(iv) FR 1646

Although a vehicle log book should be maintained in Form General 267, it had not been done so.

(d) Sri Lanka Accounting Standards

(i) No. 15

The current liabilities of an institution should not be deducted from the current assets and shown. However, the bank overdraft balance of Rs.6,696,608 in a bank account had been deducted from the balances in other bank accounts and shown in the financial statements.

(ii) No.18

If a fixed asset is being utilized after its value is fully depreciated, its fair value should be included in the accounts and credited to reserve account. However, it had not been done so in respect of all vehicles of the Authority.

(e) Public Administration Circular No. 41/90 of 10 October 1990.

Although quotations should have been called for, from garages in the Municipal limits of Colombo, Dehiwela and Mount Lavinia and the U.C limits of Kotte in respect of repairs to vehicles in Colombo, action had not been taken accordingly by the Institute. A list of competent garages also had not been maintained.

2:5:7. Transactions not Supported by Adequate Authority

- (a) The benefits specifically approved by the Cabinet, Ministry of Public Administration or the Treasury in terms of the Department of Public Enterprises Circular No.95 dated 14 June 1994 alone should be paid as allowances to their employees with the approval of the Board of Control. However, a sum of Rs.550,247 had been paid to 28 staff officers of the Authority during the year under review without specific approval.
- (b) A sum of Rs.200,000 had been incurred on printing a magazine to mark the 125th anniversary of the Medical Faculty of the University of Colombo which does not fall within the objectives of the Institute.

3. Financial and operating review

3:1. Financial results

The activities of the Authority during the year under review had resulted in a deficit of Rs.2,232,285 as compared with a deficit of Rs.4,789,206 in the previous year thus showing an improvement in financial results by Rs.2,556,921. It could be analysed as follows.

	Variance		Rs.
	Favourable	Adverse	
	Rs.	Rs.	
<b>Income</b>			
Receipts regarding foreign aid administration cost	246,715	-	
Sale of publications	1,806	-	
Interest on loans	31,192	-	
Providing printing services to outsiders	19,536	-	
Receipts from photocopies	-	4,171	
Miscellaneous	-	29,915	
Profit on sale of fixed assets	37,626	-	
Investigation income from outside activities	21,492	-	
Government grant for recurrent expenditure	4,289,000	-	
	<u>4,647,367</u>	<u>34,086</u>	4,613,281
<b>Expenditure</b>			
Office administration	1,822,317	-	
Staff salaries	-	2,011,114	
Board of control	-	78,650	
Others	-	1,788,913	
	<u>1,822,317</u>	<u>3,878,677</u>	(2,056,360)
<b>Net improvement in financial results</b>			<u>2,556,921</u>

3:2. Performance

Assistance is rendered for individuals and institutions for research activities of the Authority. According to the information furnished, the particulars of research Projects done with the assistance during the year under review compared with that of the preceding year is given below.

Research Project	Projects Sponsored by NARESA		Projects Sponsored by Foreign Institutions	
	<u>1995</u>	<u>1994</u>	<u>1995</u>	<u>1994</u>
Projects in progress at the commencement of the year	89	87	40	47
Newly commenced researches during the year	<u>67</u> 156	<u>20</u> 107	<u>1</u> 41	<u>4</u> 51
No. of research Projects concluded during the year	34	31	-	8
Projects abandoned during the year	1	1	-	3
Projects withdrawn during the year	<u>2</u>	<u>2</u>	<u>-</u>	<u>-</u>
Projects in progress at the end of the year	119 ===	73 ==	41 ==	40 ==

The Authority had granted Rs.16,572,826 and foreign institutions had granted Rs.10,507,807 in respect of the research Projects for the year under review.

3:3. Formation of a Fund in respect of Provision for Payment of Gratuity

A provision of Rs.2,667,487 had been made for payment of gratuity to employees of the Authority as at the end of the year under review. However, a fund had not been formed to settle future liabilities, if any.

### 3:4. Project Administration

Following deficiencies were observed at a test check carried out in regard to research Projects operated by the Authority.

- (a) Although due dates of sending the final reports after completion of the activities regarding the researches of the Project had lapsed, officers in charge of the following Projects had not sent those on the due dates. Also, action had not been taken to settle the balance money after incurring the expenditure.

<u>No. of the Project</u>	<u>Grant</u>	<u>Expenditure</u>			
No. of the Project	Grant	Expenditure	Savings as at 30 June 1996	Due Date of the Report	Date of sending
	Rs.	Rs.	Rs.		
RG/92/AP/3	257,200	248,363	-	August 1994	Not sent*
RG/93/SE/1	54,000	36,123	17,877	May 1996	Not sent*
RG/93/SE/2	19,000	5,261	13,739	September 1995	Not sent*
RG/93/BT/1	172,000	136,999	35,001	December 1995	Not sent*

\* These reports had not been sent even as at 15 June 1996.

- (b) Project activities had been abandoned as activities pertaining to Projects in hand had not been done in terms of 3(1) of the agreement and names of the Project officers had been black listed.

Few examples are given below.

RG/92/AP/3  
RG/92/AP/4

- (c) It was observed at a test check that provision had been estimated for each year and money approved by the Treasury in respect of certain Projects. But, as the research beneficiaries had not acted in accordance with the agreement, the provision remained unutilised. The Project activities had been abandoned at the commencement itself and money deposited in the NARESA Fund for a period of two to three years.

<u>Project No</u>	<u>Amount Approved</u> Rs.	<u>Other Particulars</u>
RG/92/C/03	110,000	Suspended at the beginning
RG/93/E/03	15,210	Suspended halfway
RG/92/AP/04	113,000	Out of the amount approved, only Rs.50,558 had been incurred up to now for the Project <b>activities.</b> Project had been suspended halfway.



3:6. Vehicle Utilization

The Authority had 20 vehicles during the year under review. Of these, 9 vehicles had been utilized for office services and 11 vehicles had been released to research Projects. Two vehicles were not in running condition. According to the information furnished, significant statistics of 9 vehicles consisting of 7 passenger vehicles and 2 motor bicycles compared with data of utilization of 8 vehicles consisting of 6 passenger vehicles and 2 motor bicycles in the preceeding year are given below.

	1995		1994	
	Passenger vehicles	Motor bicycles	Passenger vehicles	Motor bicycles
(a) Distance travelled				
Petrol K.m.	37,849	2,602	34,355	4,449
Diesel K.m.	35,679	-	35,583	-
(b) Fuel consumed				
Petrol litres	6,300	105	4,720	181
Diesel litres	2,814	-	3,868	-
(c) Average distance travelled per litre of fuel				
Petrol K.m.	6.01	24.78	7.28	24.58
Diesel K.m.	12.68	-	9.2	-
(d) Total expenditure on fuel				
Petrol Rs.	252,898	4,200	162,108	5,220
Diesel Rs.	42,411	-	53,008	-
(e) Total expenditure on repairs and maintenance				
Petrol Rs.	195,025	5,207	125,195	3,458
Diesel Rs.	86,053	-	97,344	-
(f) Total expenditure on drivers' salaries, batta and overtime				
Petrol Rs.	74,136	-	1,875	-
Diesel Rs.	31,709	-	1,300	-
(g) Provision for depreciation				
Petrol Rs.	-	-	-	198,622
Diesel Rs.	-	-	398,115	-
(h) Total cost				
Petrol Rs.	522,059	9,407	289,178	207,300
Diesel Rs.	160,173	-	549,767	-
(i) Average expenditure on fuel per kilometre				
Petrol Rs.	6.68	1.61	4.72	1.17
Diesel Rs.	1.19	-	1.49	-

(j)	Average expenditure on repairs per kilometre				
	Petrol Rs.	5.15	2.00	3.64	0.78
	Diesel Rs.	2.41	-	2.74	-
(k)	Average expenditure on drivers' salary, batta and overtime				
	Petrol Rs.	1.96	-	0.05	-
	Diesel Rs.	0.89	-	0.04	-
(l)	Average expenditure on depreciation per kilometre				
	Petrol Rs.	-	-	-	44.64
	Diesel Rs.	-	-	11.19	-
(m)	Overall average expenditure per kilometre				
	Petrol Rs.	13.79	3.62	8.42	46.59
	Diesel Rs.	4.49	-	15.45	-

Note : Sufficient information had not been furnished to audit in respect of vehicles released to research Projects in order to show the performance.

3:7. Budgetary Control

Significant variations were observed between the budgeted and actual income and expenditure thus showing that the budget had not been made use of as a tool of management control during the year under review.

4. Systems and Controls

Deficiencies observed during the course of audit were brought to the notice of the Director General of the Authority by my detailed report in terms of Section 13(7)(a) of the Finance Act. Special attention is needed in respect of the following areas of control.

- (a) Cash
- (b) Accounts
- (c) Debtors and Creditors
- (d) Assets


(S.M. Sabry)  
Auditor General.

nresf/

විගණකාධිපති සටහන

ශ්‍රී ලංකා ජවහරික සම්පත්, ඔලිෆක් හා විද්‍යා අධිකාරියේ 1995 දෙසැම්බර් 31 දිනෙත් අවසන් වර්ෂය සඳහා වූ, ඔක්තෝබර් 1971 අංක 38 දරන මුදල් පනතේ 13(1) වගන්තිය සලකා සංශෝධිතව කියවිය යුතු ශ්‍රී ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජයේ ආණ්ඩුක්‍රම ව්‍යවස්ථාවේ 154(1) ව්‍යවස්ථාවෙහි ඇතුළත් විධිවිධාන ප්‍රකාර මාගේ විධානය යටතේ විගණනය කරන ලදී.

යථෝක්ත ඔක්තෝබර් 31 දිනෙත් නිරීක්ෂණයන් අධිකාරියේ අධ්‍යක්ෂ ජනරාල් අවසාන ලද සම දින දරන මාගේ වාර්තාවේ ඇතුළත්ව ඇත.

  
(එස්.එම්.සබ්‍රි)

විගණකාධිපති.

1997 මාර්තු 10 දින.

කොළඹ 7, විගණකාධිපති දෙපාර්තමේන්තුවේදීය.

NOTE OF THE AUDITOR GENERAL

The accounts of the National Resources Energy and Science Authority of Sri Lanka for the year ended 31 December 1995 were audited under my direction in pursuance of provisions in Article 154(1) of the Constitution of the Democratic Socialist Republic of Sri Lanka read in conjunction with Section 13(1) of the Finance Act No. 38 of 1971.

My observations on these accounts are contained in my report of even date addressed to the Director General of the Authority.

Sgd: S.M. Sabry,  
Auditor General.

10 March 1997.

Auditor General's Department,  
Colombo 07.

Comments on the Auditor General's Report on the accounts for the year ended 31st December 1995.

2:5 Comments on Accounts

2:5:1 Accounting Policies

Comment correct. But the Board decision is on the 14th June 96 & not on the 12th June 1996 as reported.

2:5:2 Accounting Deficiencies

- (a) Suspense Account - Rs. 7927/-  
We have been following this procedure as a practice. In future we will do as requested.
- (b) Recurrent Expenditure - Rs. 34,670/-  
We have done according to the normal classifications followed at NARESA.
- (c) Gratuity - Rs. 226,650/-  
Refers to gratuity payments made in 1994. We do not make provision for employees who have left NARESA. Therefore we have not inflated the provision for gratuity account by Rs. 226,650/-.
- (d) Out of the Rs. 37,112/-
  - Rs. 21,600.00 - Cannot be accrued, since we have created a creditor in 1995
  - Rs. 169.50 - Cannot be accrued since it is a 1996 expenditure - Medical bill
  - Rs. 213.49 - We have accrued it in 1995 (Our journal voucher 327/1995)
  - Rs. 21,982.99

We have accounted the balance of Rs. 15,129.00 under prior year adjustments in 1996.
- (e) Profit on sale of fixed assets & income from consultancies.  
It was a typing error. We have corrected it.

2:5:3 Assets not subjected to physical verification.

An asset/stock verification was conducted by a Board of Survey appointed by the Director General. We have received their report for Motor Bicycles, Push Bicycles & Stores stock balances.

2:5:4 Unexplained Variations

At the time of the Audit the balance confirmed by the Treasury was Rs. 31,392,645/-. Now we have received the Treasury confirmation for our consolidated deposit account for Rs. 3,298,965/-. Yet there is a difference of Rs. 152,918/-. The Treasury has explained that this difference is because NARESA shows the balance taking into account the funds drawn from the treasury. But the treasury takes into account the actual expenditure of NARESA.

2:5:5 Lack of Evidence for Audit

1. Assests - A Board of Survey was appointed by the Director General to do a physical verification of Assests. We have received their report for Motor Vehicles, Motor Bicycles, Push Bicycles and Stores Stock balances.
2. Fixed Assests Registers - These are being maintained as in previous years & could be inspected at any time.  
Cash Imprest/Sundry Debtors - We have requested for confirmations

2:5:6 Non compliance with rules, regulations & management decisions

- a).
  - 1) Internal Audit Programme.  
We have already established a seperate Internal Audit Unit.
  - 2) Annual Report -Draft Annual Report of the Authority for the year 1995 has been sent to the Auditor General's Dept. on 18.07.96.
- b). Security Service - There is no contract for the security service. The payments are made on a monthly basis. Our records indicate that the security service is paying B.T.T.
- c). Financial Regulations
  1. Cheques - According to our records there is only one cheque which has not been cancelled cheque No. 666200 dated 07.06.96 for Rs. 4500/=
  2. Cash Imprest - Rs. 1500/- has been settled from the Rs.7799/-
  3. GRN - We issue Goods Receiving Notes to all items purchased. These relevant purchases had been made from foreign suppliers & it had been received directly by the Library. Now we have issued GRN notes for these items.

4. Log Books- Seperate files have been maintained to record all the necessary information of the vehicles.
- d). Sri Lanka Accounting Standards.
- i. No. 15 - accepted
  - ii. No. 18 - All vehicles stationed at NARESA have been valued in 1996 the necessary entries will be made in 1996 accounts.
  - iii. Vehicle Repair - We are unable to register garages since the Authority has only 8 vehicles. However we request for quotations from several garages to repair the vehicles. Our Board has approved to grant the maintenance to the agents. Though it may be more expensive, repair will be more effective in the long run. We have found the cheapest quotation unsatisfactory in effective repair.

2:5:7 Transactions not justified by Adequate Authority.

- a. Interim Allowance. - In the past, the previous Ministry of Science & Technology approved the implementation of Public Administration Circulars for certain categories of employees. Infact that created salary anomalies. The Hon. Minister then gave a directive that as a corporation the Board has the flexibility of making decisions of the sort that we did. The Hon. Minister has infact discussed with the Secretary to the General Treasury and the Minister of Public Administration, and has decided that Corporations have the legal Authority to exercise such decisions.
- b. One of the objectives of NARESA is to support scientific Activities (reference NARESA Act. No. 78 of 1981 - Part II-9 f (iii) and (g). Medical Science is within the perspective of NARESA and publications such as the souvenir of the 125th anniversary of the Medical College are also considered under "Scientific Activity".

Amount paid was not Rs. 200,000/- but Rs. 150,000/-.

3:3 Establishing a fund for provision for payment of Gratuity to employees.

Director General Dept. of Public enterprises has informed us that, since the Treasury releases funds required for payment of Gratuity, there is no necessity to create a fund for this purpose.

And also that the Sri Lanka Accounting standard 16 on "Accounting for Retirement benefits in the Financial Statements of Employees" does not insist on a fund being created to settle future liabilities.

3.4 Monitoring of Projects- Financial Report not received & balance funds not returned to NARESA.

- a.i. RG/92/AG/3 - This grant was operated on reimbursement basis. Hence returning funds to NARESA does not arise. Grantees submitted the Final Report after they were informed that they are defaulters. Therefore the Final Report was not accepted.
- ii. RG/93/SE/01 - Final Report received on 07.01.97
- iii. RG/93/SE/02- Reminders have been sent, but the grantee has not submitted the report.
- iv. RG/93/BT/01 - The Final Report received is being evaluated.
- b.i. RG/92/AG/03 - Grantees were black listed as they did not submit the Final Report within the period approved by the committees viz 31.05.95. They were noted as defaulters at the Authority meeting held on 13.10.95. However the grantees submitted the Final Report in January 1996.
- ii. RG.92/AG/04 - The grant was only terminated. The grantee was exempted from being noted as a defaulter. The explanation given by the grantee in regard to the unsatisfactory work of the project was accepted by the committee.
- c. i. RG/92/C/03 - This grant has been terminated in 1992. This grant was to be operated on reimbursement basis. Funds of such grants are utilized to award new grants.
- ii. RG/93/E/03 - Progress of this grant was unsatisfactory. The Rs. 10,760/- transferred to the University of Moratuwa for this grant was refunded to NARESA in 1996. Such funds are utilised to award new grants.
- iii. RG/92/AG/04- This grant was a two year grant. Which was terminated after one year. The 2nd year allocation was not released to the University. Balance funds of such grants are utilised to award new grants.

3:6 Utilisation of Vehicles

Information in respect of vehicles used by Research grantees were not available in this office at the time the Audit was done.

This information was received after the audit and are now available for inspection.

3:7 Budgetary Control

The Budget is prepared almost one year before the expenditure is incurred. As far as possible, we use the Budget as an instrument of control.

4. Systems & Control

Auditor General's comments in terms of section 13(7) (a) of the Finance Act received our attention. Our reply to these comments were forwarded to the Auditor General by our letter dated 30.09.96.

*Prof. Priyani E. Soysa*

Prof. Priyani E. Soysa  
Director General - NARSA