

Appendix A:

History of the Commonwealth Science Council

1. The Commonwealth Science Council (CSC), established in 1975 by the Commonwealth Heads of Government meeting in Kingston, Jamaica, is an autonomous intergovernmental body collaborating closely with the Commonwealth Secretariat through a Memorandum of Understanding. Its purpose is to increase the capabilities of individual nations to use science and technology for their economic, social and environmental development. The council achieves this purpose through a variety of objectives, notably through scientific and technical collaboration on a network basis among member nations, through the most effective use of the scientific and technological resources of member nations, through developing a monitoring, evaluation and advisory capability responsive to the needs of individual member nations, through the promotion of scientific research and technological development, and through the promotion of a diversification of science and technology in member nations. The history of Council dates back to 1946, when a Standing Committee was established for the British Commonwealth Scientific Officials Conference, with a secretariat in London. This Committee has undergone a number of mutations since:

1946: Standing Committee, British Commonwealth Scientific Officials Conference

1958: British Commonwealth Scientific Committee

1964: Commonwealth Scientific Committee

1975: Commonwealth Science Council

2. Prior to 1975, the Council (or then Committee) performed a liaison function. Since 1975, however, the Council has embarked on a cooperative and supportive programme limited to the transfer of technology freely available but not adequately applied to development. This change in Council's functions has resulted in some successful programmes on technology such as that on Rural Technology, Energy, Standardisation and Metrology, and Geology and Mineral Resources; and in the establishment of networks of collaborating scientists on specific projects. The Council established a Working Group in 1981, to review its programmes. On the basis of this Group's report, the Council noted in 1982, the measure of success its limited programme had achieved and the non-linear advances in technology, and decided to shift its programme emphasis from technology transfer to the use of science for technology for development.

Appendix B:

Scientists who Contributed their Expert Opinions to the Expert Group

<i>Scientist</i>	<i>Area of Science</i>
1. Dr. C. E. Astley-Boden, Mineral Physics CSIRO, Sydney, AUSTRALIA	Remote Sensing—The Australian Perspective
2. Professor C. H. R. Atkinson, Director, Microbial Technology Laboratory, PHLS Centre for Applied Micro- biology and Research, Salisbury, Wiltshire SP4 0JG, ENGLAND, UK	Microbiological Aspects of Genetic Engineering and Biotechnology
3. Dr. I. E. L. Baumgart, 27 Onehuka Road, Lower Hutt, NEW ZEALAND	Coastal and Maritime Zone Management
4. Professor D. Bradley, Division of Communicable and Tropical Diseases, London School of Hygiene and Tropical Medicine, Keppel Street, (Gower Street), London WC1E 7HT, ENGLAND, UK	Epidemiology of Communicable Diseases

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<i>Scientist</i>	<i>Area of Science</i>
5. Dr. J. Brown, GEC, University & Schools Liaison, Wembley, Middlesex HA9 7PP, ENGLAND, UK	Microelectronics
6. Professor G. M. Brown, FRS, Director, Institute of Geological Sciences, Keyworth, Nottingham, ENGLAND, UK	Geosciences
7. Dr. R. Chandra, Computing Department, Imperial College of Science and Technology, Exhibition Road, London SW7 2AZ, ENGLAND, UK	Information Technology
8. Dr. D. S. Cronan, Applied Geochemistry Research Group, Department of Geology, Royal School of Mines, Imperial College of Science and Technology, London SW7, ENGLAND, UK	Coastal and Maritime Zone Management
9. Professor B. O. Drasar, Division of Communicable and Tropical Diseases, London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London WC1E 7HT, ENGLAND, UK	Epidemiology of Communicable Diseases
10. Dr. Peter Ellis, Physics and Engineering Laboratory, DSIR, Lower Hutt, NEW ZEALAND	Remote Sensing

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<i>Scientist</i>	<i>Area of Science</i>
11. Dr. N. C. Fleming, Institute of Oceanographic Sciences, Brook Road, Wormley, Godalming, Surrey, GU8 5UB, ENGLAND, UK	Coastal and Maritime Zone Management
12. Professor H. M. Gilles, Department of Tropical Medicine, Liverpool School of Tropical Medicine, Liverpool, ENGLAND, UK	Epidemiology of Diseases Caused by Protozoa and Helminths
13. Dr. M. Hadley, Division of Ecological Sciences, UNESCO, Paris, FRANCE	Integrated Resources Management
14. Professor B. S. Hartley, Centre for Biotechnology, Imperial College of Science and Technology, London SW7, ENGLAND, UK	Genetic Engineering/ Biotechnology—
15. Dr. E. D. Hondros, National Physical Laboratory, Teddington, Middlesex, ENGLAND, UK	New Materials
16. Dr. K. McCracken, CSIRO, Mineral Physics, Sydney, AUSTRALIA	Remote Sensing
17. Dr. D. J. McLaren, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A OE8, CANADA	Geosciences

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<i>Scientist</i>	<i>Area of Science</i>
18. Dr. J. R. Metcalfe, Director, CAB Information Service, Farnham House, Farnham Royal, Slough SL2 3BN, ENGLAND, UK	Information Technology
19. Dr. N. Myers, Consultant in Environment and Development, Upper Meadow, Old Road, Headington, Oxford OX3 8SZ, ENGLAND, UK	Genetic Resources—Under Exploited Plants
20. Sir Charles Pereira, FRS, Peartrees, Teston, Maidstone, Kent ME18 5AD, ENGLAND, UK	Agriculture
21. Dr. M. E. D. Poore, Commonwealth Forestry Institute, Oxford University, Oxford, ENGLAND, UK	Tropical Forest Ecology
22. Professor R. W. Radley, Silsoe College, Department of Agricultural Engineering, Silsoe, Bedford MK45 4DT, ENGLAND, UK	Agriculture
23. Professor U. R. Rao, Director, Indian Space Research Organisation, Satellite Centre, A1-6 Peenya Industrial Estate, Peenya, Bangalore 560 058, INDIA	Remote Sensing

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- | <i>Scientist</i> | <i>Area of Science</i> |
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| 24. Professor G. Rose,
Department of Medical Statistics
and Epidemiology,
London School of Hygiene and
Tropical Medicine,
Keppel Street,
London W1,
ENGLAND, UK | Epidemiology of Non-
Communicable Diseases |
| 25. Dr. P. Ryder,
Assistant Director,
Meteorological Office,
London Road,
Bracknell, Berkshire RG12 2SZ
ENGLAND, UK | Information Technology |
| 26. Dr. N. W. Simmonds,
The Edinburgh School of
Agriculture,
West Mains Road,
Edinburgh EH9 3JG,
SCOTLAND, UK | Genetic Resources—Crop
Plants |
| 27. Professor R. O. Slatyer, FRS,
Research School of Biological
Science,
Australian National University,
P.O. Box 4,
Canberra, ACT 2600
AUSTRALIA | Ecological and Environmental
Sciences |
| 28. Professor J. Spence,
Department of Biological
Sciences,
University of the West Indies,
St. Augustine,
TRINIDAD & TOBAGO | Agriculture |
| 29. Dr. P. Treleaven,
The University of Reading,
Department of Computer
Science,
Whiteknights Park
Reading RG6 2AX,
ENGLAND, UK | Information Technology |

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<i>Scientist</i>	<i>Area of Science</i>
30. Dr. E. P. Wright, Institute of Geological Sciences, Wallingford, ENGLAND, UK	Geosciences

Appendix C

Statement of Commonwealth Scientific Cooperation by the Commonwealth Heads of Government, Meeting in New Delhi on 23–29 November 1983

Commonwealth Scientific Co-operation

- ‘8. Heads of Government expressed their appreciation of the work of the Commonwealth Science Council which was charged with fostering co-operative activities designed to enhance the scientific and technological capabilities of member countries. They welcomed the establishment of an Expert Group to examine ways and means of promoting an expanded programme of Commonwealth scientific co-operation, which would encourage work in new areas of developmental significance, including high technology, and affirmed the priority which they accord to strengthening Commonwealth scientific cooperation.’

Appendix D

Programme Areas and Thrusts of the Commonwealth Science Council

(a) Energy Programme

1. The Council's Energy Programme concerns appropriate energy supplies (conventional, alternative, or renewable) and upgrading conventional energy technologies (such as through transfer of viable renewable energy technology). Activities in this programme have been implemented through three regional programmes, namely the Caribbean Alternative Energy Programme (CAEP), the African Energy Programme (AEP) and the Asia-Pacific Rural Technology Programme (APRTP). Their aim has been to develop renewable energy technologies and to evaluate rural needs and resources. These activities have enhanced the awareness of participants to the vital importance of energy for sustainable social, economic or industrial development. R & D projects are being pursued in solar crop drying, charcoal production, and biogas production, in the African Region. Substantial data in meteorology (wind systems, local solar insolation factors, etc) is being collected, and a significant use of energy accounting (energy assessment, auditing) is being carried out, in the Caribbean region.

2. The Programme's thrust is on the ability of member nations to initiate, develop and apply coherent energy policies and plans in the context of overall socio-economic needs; on the feasibility of each of a number of projects in the African region, such as solar heating and cooling, wind energy for water pumping, wind electricity, and meteorological data collection; and on the development of networks for information gathering and dissemination within the Caribbean region.

(b) Mineral Resources Programme

3. The Council's Mineral Resources Programme concerns the mapping, exploration, extraction, analysis, management and utilisation of mineral resources. This Programme is advised by the Commonwealth Committee on Mineral Resources and Geology (CCMRG). Its thrust is on geological mapping using remote sensing or photographic imagery techniques; mineral exploration (terrestrial, marine, estuarine or off-shore) using geochemical and geophysical methods; the authentication of mineral resources of economic value and on hydrological and hydrogeological survey for the assessment and management of underground and surface water resources.

4. This Programme also publishes and distributes a bi-monthly *Earth Sciences Newsletter* to disseminate current information on geology and mineral resources, especially to geologists with poor access to literature. This Newsletter has been particularly successful.

(c) Renewable Natural Resources Programme

5. The Council's Renewable Natural Resources Programme concerns survey, identification, collection, authentication, culture, conservation and management techniques and methodologies for natural resources (viz: plant, animal and microbial) with potentially viable socio-economic benefits (protein-nutritional, medicine-pharmaceutical, or economic-commercial). Activities in this programme have comprised mainly training workshops, field surveys and commissioned studies, implemented under the auspices of three regional programmes, namely the Caribbean Natural Products Programme (CNP), the African Natural Products Programme (ANP) and the Asia-Pacific Rural Technology Programme (APRTP). The Council's past activities on Renewable Natural Resources have been fairly successful in initiating national programmes on evaluation of specific natural resources especially marine algae and seaweeds in the Caribbean and Africa regions, and medicinal plants in the Asia-Pacific and the Caribbean, and in identifying a number of projects for collaborative inter-country or inter-regional effort particularly the Water Hyacinth Project in the Asia-Pacific region.

6. It is envisaged to enlarge the scope of this programme to include conservation and management of genetic resources for sustainable human use; and the development and preparation of new commercial products such as pharmaceuticals, using genetic engineering and fermentation technology methods. In the Caribbean Natural Products Programme (CNP), activity centres around ethnobotany and botanical taxonomy, authentication of medicinal plants in order to isolate those plant resources with medicinal-pharmaceutic values, and isolation of various non-food marine natural products from seaweeds, various

invertebrates, and trash fish. In the African Natural Products Programme (ANP), activities have focussed on medicinal plants, agro-industrial wastes, culture of micro-organisms, and agro-forestry systems for enriching the soil. In the Asia-Pacific Rural Technology Programme (APRTP), the viable management of the water hyacinth through biological control using safe and environmentally acceptable agents for suppression, the utilisation of the water hyacinth as feedstock for biogas digesters and also as resource for paper, have been successful. Activities are being focused on marine algae, medicinal plants, and plants for agro-industrial uses.

(d) Environmental Planning Programme

7. The Council's Environmental Planning Programme concerns the integrated assessment, management and planning of natural resources in relation to the environment. This programme focuses on ecological management, environmental assessment, and ecosystem evaluation with the view to developing ecological indicators.

(e) Industrial Support Programme

8. The Council's Industrial Support Programme concerns scientific and technical services supportive to industrial development. The Programme has been implemented through three regional programmes, namely the Asia-Pacific Metrology Programme (APMP), the African Programme on Standardisation and Quality Control (APSQC) and the Caribbean Metrology Programme (CMP), to build up an infrastructure knowledge in scientific measurement (for exactitude and credibility), standardisation (for national, regional, or international recognisability), and quality control (for national, regional or international acceptability). Future activities of the programme are envisaged to include microcomputers (microprocessor applications, etc), new materials (alloys, plastics, composites, ceramics or biological materials), and new techniques (e.g. genetic engineering). A Memorandum of Understanding has been signed between the Council and the African Regional Organisation for Standardisation (ARSO) incorporating all the activities of APSQC with effect from January 1984.

(f) Science Policy and Organisation Programme

9. The Council's Science Policy and Organisation Programme concerns the formulation of a policy for science and a scientifically-based policy (including the establishment of infrastructure) to enable the management of science and scientists for development. This programme comprises research management and evaluation, organisational infrastructure, and information dissemination for technological aculturation. Future activities will focus on methodologies for evaluating national R & D efforts, on the role of indigenous professional scientific bodies,

on national mechanisms for coordinating research and development funding, on the application of computer-based information for decision-making, on disseminating information on advances in science and technology pertaining to development, and on the development of reliable statistical indicators of local scientific and technological innovations for measuring productivity, growth and development, instead of input-output economic indicators.

(g) Fellowship Scheme

10. The Council's Fellowship Scheme aims to develop local expertise through opportunities for skill enhancement and professional training for scientists involved in the Council's programmes.

Appendix E

Subject Areas for a Cooperative Programme Referred to Member Nations

1. Genetic Resources
2. Integrated Resource Management
3. Remote Sensing
4. Coastal Zone Management
5. Tropical Forest Ecology
6. Soil Erosion
7. Floods and Droughts
8. Natural Hazards Forecasting
9. Energy
10. Environmental Quality
11. Atmospheric Science
12. Metrology and Standards
13. Design Engineering
14. Genetic Engineering
15. Biotechnology
16. Microelectronics
17. Maritime Management
18. Sea-bed Mining
19. High Energy
20. Laser Technology
21. Computer-Aided Design
22. Space Science

Appendix F:

Steps in the Implementation of the Commonwealth Science Council's Programme

- (1) Establishing advisory committees, expert panels or task forces to elaborate a programme area into potential projects;
- (2) Establishing networks of active scientists as project groups or working groups to exchange information on each potential project, and to elaborate the scientific issues, technical activities and modes of cooperation for the project;
- (3) Seeking the advice of professional experts, referees or consultants on project activities and modalities, and on priorities between projects;
- (4) Securing the endorsement of Council for financial, governmental and institutional support;
- (5) Implementing the technical activities specified for each project, with adjustments made by the project group;
- (6) Establishing advisory committees, expert panels or task forces to evaluate the projects and programmes from time to time, and to advise on the future of projects and programmes.