Appendix 1

Abbreviations and Glossary

I. ABBREVIATIONS

ASEAN	Association of South-East Asian Nations
ATM	Automated teller machine
ATAS	Advance Technology Alert System
CAD	Computer-aided design
CAM	Computer-aided manufacture
CITEP	Commonwealth Industrial Training and Experience Programme
CNC	Computer-numerically-controlled
CPU	Central processing unit
CSC	Commonwealth Science Council
DNA	Deoxyribonucleic acid
EEC	European Economic Community
ESCAP	Economic and Social Commission for Asia and the Pacific
FMS	Flexible manufacturing system
GDP	Gross domestic product
GNP	Gross national product
HSLA	High-strength low-alloy
HYV	High yielding variety
IC	Integrated circuit
ILO	International Labour Office
kW	Kilowatt
MCA	Monoclonal antibody
MFA	Multifibre Arrangement
MW	Megawatt
NCMT	Numerically-controlled machine tool
NGO	Non-governmental organisation
NIC	Newly industrialising country

OECD	Organization for Economic Cooperation and Development
PV	Photovoltaic
RAM	Random access memory
R & D	Research and development
rDNA	Recombinant deoxyribonucleic acid
S & T	Science and technology
TNC	Transnational corporation
UN	United Nations
UNCSTD	UN Centre for Science and Technology for Development
UNCTAD	UN Conference on Trade and Development
UNDP	UN Development Programme
UNESCO	UN Educational, Scientific and Cultural Organization
UNIDO	UN Industrial Development Organization
VCR	Video cassette recorder
VDU	Visual display unit
VLSI	Very large scale integration
WIPO	World Intellectual Property Organization

II. GLOSSARY

Appropriate technology. This may be defined as the set of techniques which make optimum use of available resources in a given environment. For each process or project, it is the technology that maximises social welfare if factor prices are shadow-priced.

Basic needs. This term includes several elements: first, certain minimum requirements of a family for private consumption—adequate food, shelter and clothing, as well as certain items of household equipment and furniture; second, essential services provided by and for the community at large, such as safe drinking water, sanitation, public transport, and health, educational and cultural facilities; and third, freely chosen employment to provide income and self-respect. The concept is a country-specific and dynamic one, which should be seen within the context of a nation's overall economic and social development.

Biotechnology. The application of scientific and engineering principles (particularly those employed in microbiology, biochemistry, genetics, biochemical and chemical engineering) in the processing of materials

by biological agents (such as micro-organisms, enzymes, and animal and plant cells) to produce goods and services.

Central processing unit. The main processing area of a computer which carries out arithmetic, logic and control functions.

Computer. A general term used to describe any machine which processes data according to defined instructions and which is programmable.

Computer-aided design. The use of a computer system to assist in translating a concept into an engineering, construction, or other working design using a data bank of design principles and other information, together with the production of information, including drawings, for the use in manufacturing processes and other productive activities.

Computer-aided manufacture. The use of computer(s), including CAD, as a direct input to control manufacturing equipment (for example, computer-numerically-controlled machine tools, inspection and test equipment, industrial robots, etc.).

Computer-numerically-controlled. Usually refers to machine tools which are numerically controlled by microprocessors to carry out programmable functions.

Deoxyribonucleic acid (DNA). A large, complex organic molecule which carries, coded within its chemical structure, the information for controlling protein synthesis in all living organisms. Hence it controls their physical structure, growth, reproduction and functioning.

Flexible manufacturing systems. The linking of automated manufacturing cells (usually CNC tools and other automated equipment) to an automated transfer line controlled by a computer hierarchy.

Hardware. The physical equipment and components required to build a productive system.

Information technology. The range of telecommunications, telematics and information technologies, centred around microelectronic devices which permit the storage, transmission and manipulation of data in digital form, at low cost and great speed. The term *informatics* is sometimes used to describe this technology.

Invention. An idea or prototype of a new product or process. It does not become an innovation until it reaches the market.

Innovation. An entirely new or technically substantively different product or process which is offered for sale to potential users.

Integrated circuit ('Chip'). A set of electronic components and their interconnections, fulfilling one or more functions and imprinted on a single chip of semiconductor material, generally silicon.

Micro-computer. A small computer using a microprocessor as its central processing unit and with a small number of associated chips.

Microelectronics. A general term to describe the technology associated with large- and very large-scale integrated circuits, particularly microprocessors and memory chips. Frequently used interchangeably with such terms as microtechnology, informatics, etc.

Microprocessor. A central processing unit contained on a single chip. The basis for micro-computers, mini-computers and many other microelectronics products.

Mini-computer. A medium-sized computer with considerable storage and processing power, normally using hard disks as external storage. At the bottom end of the range there is a blurring of distinction with micro-computers; at the top, a similar blurring with mainframe computers.

Monoclonal antibody. An antibody (protein component of the immune system found in mammals' blood) which is derived from a single source clone of cells and which recognises only one kind of antigen.

Newly industrialising countries. Certain developing countries which have built up a substantial (mainly export-oriented) industrial sector, based initially on relatively low labour costs; examples include Argentina, Brazil, Hong Kong, Mexico, Singapore, South Korea and China (Taiwan).

Robot. A reprogrammable, multifunctional mechanical manipulator designed to perform a variety of tasks through variable programmed motions.

Semiconductors. Electronic components made from materials such as silicon or germanium which amplify, switch or rectify electric currents. They include discrete functional devices such as transistors and integrated circuits.

Software. Intellectual creation comprising the programmes, procedures, rules and any associated documentation pertaining to the operation

of a data processing system. Software is independent of the carrier medium.

System. An organised grouping of people, methods, machines, and materials collected together to accomplish a specific task.

Systems analysis. Analysis needed to design a system to meet the defined needs of an organisation for the optimal means of producing goods and services.

Technology assessment. Process for the systematic analysis, forecasting and evaluation of a broad range of impacts on society pertaining to technological change and choice, in order to identify public policies and options. It helps to match technological developments to national goals.

*Technology blending.*The integration of emerging technologies with traditional modes of undertaking production and other activities to ensure higher productivity while retaining some of the traditional characteristics of conventional techniques.

Technology forecasting. Attempts to predict future developments in technology, and future effects of a specific technological development on an economy, society and environment.

Telematics. The fusion of telecommunications and computer technologies made possible by digital electronics. Data in digital form are stored, manipulated and transmitted between computers using public telecommunication transmission networks. A term sometimes used interchangeably with *informatics.*

Videotext/viewdata. Computer/TV/telephone-based information system which gives the subscriber access to textual information on a wide range of subjects via the telephone line.

Visual display unit. A terminal comprising a keyboard for data input and a display screen to monitor the input.

Appendix 2

Terms of reference for working group on the management of technological change

The Working Group is requested to:

(i) examine the existing and potential impact of the adoption of new technologies, particularly microelectronics, on the economies of Commonwealth countries, paying special attention to employment, productivity changes, industrialisation in developing countries, trade between developed and developing countries, and social impact;

(ii) identify appropriate policy measures to facilitate the process of adjustment to these technologies, including training and retraining arrangements, taking into account possible disruptive effects on employment and existing industries; and

(iii) suggest arrangements for the sharing of Commonwealth experience in this field in order to enable Commonwealth countries to derive maximum benefits from new technologies.

Appendix 3

Members of the commonwealth working group on the management of technological change

Professor M. G. K. Menon (Chairman)	Member, Indian Planning Commission and Chairman, Science Advisory Committee to the Cabinet, Government of India. Formerly Secretary, Department of Science and Technology (1978–1982); Director-General, Council of Scientific and Industrial Research (1978–81); Chairman, Electronics Commission and Secretary, Department of Electronics (1971–78).
Dr. Desmond Ali	Deputy-Director, Caribbean Industrial Research Institute, Trinidad & Tobago; formerly Deputy-Secretary, Commonwealth Science Council (1980–83).
Dr. M. N. B. Ayiku	Coordinator, Technology Transfer Centre, Council for Scientific and Industrial Research, Ghana; Chairman, meeting on intra-ACP cooperation in transfer of technology, Brussels, November 1983.
Mr. Iann Barron	Managing Director, Inmos Limited; member of Alvey Committee on a Programme for Advanced Information Technology (United Kingdom), 1982; founder-member, Computer Technology Limited.
Mrs. Shirley Carr	Secretary-Treasurer, Canadian Labour Congress; member of Governing Body, ILO; co-chairperson, Labour Market and Productivity Centre, Canada.

Dr. David Gachuki	Faculty of Law, University of Nairobi; consultant, East Africa Technology Policy Study, International Development and Research Centre of Canada, Regional Office, Nairobi, Kenya.
Dr. Linda Lim	Centre for South and Southeast Asian Studies, University of Michigan, USA; consultant to United Nations (including ILO, ESCAP, UNCTC and UNIDO).
Sir Bruce Williams	Director, Technical Change Centre, London; formerly Vice-Chancellor and Principal, University of Sydney (1967–81).
Mr. Carl Wright	Director, Commonwealth Trade Union Council; formerly Labour Adviser, UN Centre on Transnational Corporations (1978–80) and Secretary, Economic and Social Committee, International Confederation of Free Trade Unions, Brussels (1974–80).

Commonwealth Secretariat

Sir Peter Marshall	Deputy Secretary-General (Economic)

Economic Affairs Division

Dr. B. Persaud	Director and Head (Secretary of Working Group)
Dr. J. V. Cable	Special Adviser
Mr. I. R. Thomas	Assistant Director
Mr. M. A. Cobban	Chief Officer (Economics)
Miss S. E. Hyne	Senior Economics Officer
Ms. A. M. Weston	Senior Economics Officer

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