ZAMBIA:

NATURAL RESOURCES EXPERTISE PROFILE

A report based on the work
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Revised edition

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Conservation for Development Centre
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of Nature and Natural Resources
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The **International Union for Conservation of Nature and Natural Resources** (IUCN) is an independent, international conservation organization. Its aim is to promote scientifically-based action directed towards the maintenance and sustainable use of living natural resources. Founded in 1948, it has some 537 members in 116 countries, including 58 sovereign states, 123 government agencies, and 325 non-governmental organisations (NGOs), 25 international NGOs and 6 affiliates*. Its global network, in addition to the membership, comprises more than 3000 scientists and other experts in all areas of conservation, participating in the work of IUCN Commissions and Centres.

March 1980 saw the launch of the **World Conservation Strategy** (WCS), prepared by IUCN with the advice, cooperation and financial assistance of the United Nations Environment Programme (UNEP) and the World Wildlife Fund (WWF), and in collaboration with the Food and Agriculture Organization (FAO) and the United Nations Educational, Scientific and Cultural Organization (Unesco).

IUCN's **Conservation for Development Centre** (CDC) was established in 1981 to address problems highlighted in the WCS on a project-by-project basis. It is an international independent non-profit centre, developing and implementing projects and providing managerial and technical skills to address critical problems of living natural resource management.

* based on August 1985 figures.

FOREWORD

This is the third in a series of country studies commissioned by the Conservation for Development Centre of the International Union for Conservation of Nature and Natural Resources. It is one of three studies made possible by funding from the Government of The Netherlands.

The object of this study is to evaluate expertise available in Zambia, for planning and implementing environmentally-sound development strategies, policies and projects. The report is intended for use as a practical tool by the sponsor, by the Government of Zambia and other agencies.

The World Conservation Strategy, launched in 1980, outlines a series of global priorities for action in the field of conservation. It recommends that every nation review the extent to which it is achieving conservation and sustainable development, and prepare a strategy to overcome the obstacles. In particular it draws attention to the need to solve a characteristic dilemma of developing countries: how to combine the short-term measures urgently needed to alleviate human suffering, with the long-term measures necessary to safeguard the natural resource base on which development depends.

In the following year IUCN established CDC as an integral part of its organisation. CDC was to develop and implement projects designed to obtain tangible sustainable benefits for mankind, with concentration on the poorest communities, through the application of practical conservation principles. One part of CDC's work is to advise and assist countries in the preparation of national conservation strategies and environmentally-sound development projects. To assist with this, CDC has developed a comprehensive consultant register which reflects the growing need for individuals who are particularly versed in the problems of sustainable development. It has been recognised, however, that the register has not adequately identified the pools of expertise already available within developing countries, whether nationals, residents of the country concerned, or nationals temporarily abroad.

In view of the need to develop a more broadly-based resource of potential expertise, CDC has embarked on a series of country studies - Natural Resources Expertise Profiles - of which the present one is the first to appear. These studies present:

> a brief overview of a country's environmental programmes and the supply of, and demand for expertise in that particular country;
>
> a survey of the capacities of local institutions, governmental and non-governmental, to meet the present and expected future demand; and
>
> a review and analysis of the expertise available within the country, including individual biodata summaries.

It is intended that these country studies will be of use not only to the sponsor, but also to the governments of the countries concerned, development assistance agencies and development banks, and others, in the preparation or implementation of national conservation strategies, programmes and projects planned within a framework of economic development. It is hoped that the reports will help identify areas of need, strength and weakness as far as environmental expertise is concerned, and ensure that this expertise is used to its best advantage. The expertise thus identified will be entered onto the consultant register and thereby made available to agencies and governments seeking advice on expertise available for conservation/development projects.

Although a number of other registers of expertise exist and are available for consultation, it was considered desirable to develop a single register that could be consulted to identify experts in the field of conservation for development. It is CDC's hope that the service offered through the register and country studies will facilitate and improve the selection of appropriate expertise, and particularly to enable searches to be carried out to the specifications of the requesting agency.

The computerised consultant register allows rapid searches for individuals with the required combinations of expertise and experience. These computerised files are backed by comprehensive manual files containing regularly updated information and full curricula vitae. With the assistance of its collaborative organisations CDC/IUCN is also able to draw on expertise and advice of individuals in fields not traditionally those of IUCN.

This Zambia study is the result of a brief but intensive survey over a period of a few weeks. It does not claim to be comprehensive or exhaustive, and the appearance of names in the list of consultants does not necessarily imply a recommendation by CDC. Such a service can be offered by CDC upon request. By demonstrating the value of country studies as a method of identifying a greater range of national expertise, it is hoped that this report will serve as a stimulus for further similar studies.

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forestry; expertise in this area is lacking, but the department has already established a special committee to look at the priorities for fuelwood provision, etc.

The 36 professional officers (assistant conservator and above) are responsible for four divisions, i.e. Management, Research, Beekeeping and Forest Training and Extension Services, the provincial offices, and two (an inadequate number) nurseries.

The Forest Extension and Publicity Services Division has considerable expertise at preparing published material for educating the public about the values of trees. However, it has most insufficient staff to provide a full extension service. With the removal of industrial plantations to ZAFFICO, and the increasing deforestation and firewood shortage problem, this division in particular is currently seeking support to strengthen its capability for community forestry and agroforestry extension.

The division also looks after the Zambia Forest College at Mwekera (near Kitwe), which is geared to an annual intake of 20 for each of its technical-level foresters and rangers courses. This college currently lacks training facilities, particularly regarding knowledge of other land uses, agroforestry and extension work, but is being improved with grants from FINNIDA.

The Beekeeping Division runs courses, buys honey and processes it.

The Research Division carries out a whole range of forestry research (notable for conservation reasons are development of more efficient charcoal kilns, and trials for silviculture of indigenous woodlands), but many experiments are frustrated by a low level of funding, management and transport.

The Management Division is responsible for matters such as managing department plantations and undertaking surveys.

3.1.5.2 Natural Resources Department

P.O. Box 50042, Lusaka
Telephone: 215204

The Natural Resources Department is the smallest in the ministry, but covers a very wide scope - the conservation of natural resources and fisheries, and the control of pollution which arises from non-industrial activities.

The actual activities which are carried out by the department fall short of its remit, for three main reasons:

- the Natural Resources Advisory Board, for which it acts as executive body, is inactive;
- the manpower strength is very low, with two professional officers and 18 technician-level officers, the latter being mainly trained as foresters and without the scope of training required in their jobs; and
- the funds available are small.

In spite of these problems, the department manages to carry out four main types of activity, although at a level far lower than is desirable:

- In cooperation with the Agriculture Department, 50 field officers hold short courses for farmers at the farmers' training institutes. There are few resources for extension activities at the farm.
- The field officers also construct certain soil conservation works and manage demonstration plots.
- The department also carries out experimental plots and data collection, particularly regarding fuelwood, deforestation and soil erosion. The field officers participate in amenity tree planting schemes, and are beginning to involve communities in this.

3.1.5.3 Department of Lands

P.O. Box 30069, Lusaka
Telephone: 214988

This department is charged with the sub-division of lands and matters pertaining to land tenure. As a result, most of its six professional staff are trained in law. There is no actual procedure of land use planning, nor any control and jurisdiction on a continuous basis as to how the land is being used. However, this is not to say that the department's legal expertise is not without benefit to conservation; efforts are being made to select two pilot areas in the reserves, where some form of title can be issued to the users of the land, in order to encourage more sustainable use.

The department works in conjunction with the Department of Surveys and the Town and Country Planning Department.

3.1.5.4 Department of Surveys

P.O. Box 50397, Lusaka
Telephone: 214988

This department is charged with the responsibility of making boundary surveys, marking out plots, and coordinating and undertaking map production. There are 13 professional scale staff and 130 technicians; however, their numbers are inadequate for the keeping up with work schedules.

3.1.5.5 National Parks and Wildlife Service

Private Bag 1, Chilanga
Telephone: 278361

This department is responsible for protecting, conserving and managing parks (8.4 per cent of the land area), 31 game management areas (21.8 per cent) and three small bird sanctuaries, as well as ensuring that open areas are

hunted with legal permits. With a field staff of around 700, and with very limited funds and equipment, this is a difficult task; poaching and encroachment into protected lands has increased. Nevertheless, substantial achievements have been made in anti-poaching operations (some in conjunction with Save the Rhino Trust - see 4.1.5 below). Tourism development in the parks has taken place, and some income is generated from licences, trophies, game meat and rural employment. Ecological research is carried out particularly on rhino, elephants and lechwe, although there are no proper central research facilities. Education facilities, such as Nyamaluma and Tree Tops school camps, are very much underused and educational skills are lacking. Links with the Wildlife Conservation Society are on a personal rather than an official basis.

Twenty-two professional-scale staff include some highly- trained officers, but their activities are hindered by a lack of coordination with other government agencies operating in or around the protected areas and particularly with tourism, even though tourism in Zambia depends largely on wildlife.

The department's emphasis is turning towards:

- making wildlife pay its way through the establishment of a revolving fund to return some of the benefits of wildlife conservation (notably income from ivory) directly to wildlife management operations, rather than to central government; and
- providing more benefits to local people.

3.1.6 Ministry of Mines

P.O. Box 31969, Lusaka
Telephone: 211220 / 211490

The impact of mining on other natural resources is significant, especially as mining is still the nation's principal source of income, and many existing laws still favour mining regardless of pollution and land dereliction that has occurred. For example, because of the importance of mining to the nation, legislation still permits the industry a monopoly on water resources, and mining is the only activity that cannot be excluded from the national parks.

The agencies under this ministry that are of interest to conservation are: Department of Geological Survey (P.O. Box RW 50135, Lusaka. Telephone: 212553), Department of Mining Development - a licensing authority - and the Prescribed Minerals and Materials Commission which has authority over the exploitation of radioactive minerals.

The ministry together with its departments has around 30 graduate Zambian staff, qualified mainly in geology, metallurgy and mining engineering. The low number is due to most Zambians joining the private sector of the mining industry where they are better paid. Much of the staff in the public agencies is expatriate.

There is an urgent need to reinforce this sector with adequately trained personnel. Indeed, there is currently discussion proposing the amalgamation of the government wildlife sector with the ministry (there was once a Ministry of Tourism and Wildlife).

3.1.7 Ministry of Power, Transport and Communication

P.O. Box RW 50065, Lusaka
Telephone: 251830

The ministry is responsible for power production and development in the country. It supervises and controls the importation of all necessary forms of fuel and coordinates the activities of the National Energy Council, which is constituted within the ministry with the Department of Energy as its executive wing; with the Zambia Electricity Supply Corporation, a national organisation which has blanket water rights for hydro-electric power generation (see separate entry); with the Copperbelt Power Company; and with the Central African Power Corporation (see separate entry).

By the nature of these organisations' activities, they may pollute and inundate prime agricultural land and wildlife estates.

3.1.7.1 The National Energy Council (NEC)

P.O. Box RW 50065, Lusaka, Zambia

The government has recognised that there should be a single agency which is ultimately responsible for the coordination of energy production, conservation and pricing; it therefore created the National Energy Council (NEC). This body comprises 12 part-time representatives from government, parastatal, private and university organisations appointed by the minister. Apart from the chairman, the NEC includes two representatives with experience in industry. The NEC meets every three months and reports to the minister.

3.1.7.2 Department of Energy

To assist the NEC, the Department of Energy was created as an executive wing. The department is now the operational section of the council and carries out research into energy demand and consumption. It is manned by eight professional staff.

3.1.7.3 Meteorological Department

P.O. Box 30200, Lusaka
Telephone: 216725

One other department which is of relevance to conservation is the Meteorological Department. This department carries out weather forecasts. A good knowledge of weather and its forecasting is essential for planning and designing some projects including agriculture. The department has 11 professional staff.

3.1.8 Ministry of Tourism

P.O. Box 50573, Lusaka
Telephone: 211110

This ministry was established in order to develop and exploit Zambia's tourism potential, which is based mainly on wildlife and other natural resources, such as waterfalls, lakes and rivers. By the nature of the industry's dependence upon natural resources, its operations have important consequences for conservation.

Organisations under this ministry include the National Museums Board, the Hotel Board, the Zambia National Tourist Board (established in 1980 for publicity and promotion) and the National Monuments Commission. Munda Wanga Zoological and Botanic Gardens is also administered by the ministry.

3.1.8.1 National Monuments Commission

P.O. Box 60124, Livingstone
Telephone: 2711

The commission is a statutory body, established in 1947 for the protection, preservation and presentation of unique natural features, fossils and relics which are historic and prehistoric and have a national or international significance; it also lists historic buildings and investigates archaeological sites.

3.1.8.2 National Museums Board

Livingstone Museum, P.O. Box 60498,
Livingstone
Telephone: 2206

The board is concerned with the conservation (preservation) of natural, historical and cultural features of the past, and serves to present these aspects to the public.

The ministry, together with the organisations it administers, has inadequate personnel trained in the relevant fields of conservation or tourism. The National Museums Board employs two entomologists and three other graduates. Munda Wanga is run by a biology graduate and a vet. The National Monuments Commission has two professional archaeologists only, while the Zambia National Tourist Board has a number of linguists, historians and journalists but no naturalists.

3.1.9 National Commission for Development Planning (NCDP)

P.O. Box RW 50268, Lusaka
Telephone: 211991

This commission falls under the office of the President. It is responsible for coordinating national development, by preparing development policy guidelines, compiling the five-year plans and

coordinating aid agency funding and programmes. Through the National Council for Scientific Research, it helps to coordinate national research to help achieve development aims. The commission is also responsible for the Central Statistical Office (P.O. Box 31908, Lusaka. Telephone: 211231), an office concerned with economic and demographic statistics. The commission's role in directing development and recommending the allocation of financial resources for projects has a direct impact on conservation, since it defines priority projects; its sectoral development programmes and planning policies determine the way natural resources are utilised by industry in particular. Since the adaption of the National Conservation Strategy, the National Conservation Committee in the Ministry of Lands and Natural Resources has been working with NCDP to develop environmental planning procedures.

Coupled with the above is the commission's role in coordinating the Southern African Development and Coordinating Committee (SADCC), an economic and development community of Southern African states aimed at pooling resources and capabilities for the region's development. The commission coordinates all government, parastatal and private organisations in their involvement in SADCC. Projects under SADCC include wildlife, fisheries, forestry, water resources, energy, etc. although progress on implementing such projects in Zambia has been slow.

Sixty economists form the major part of the professional staff. There is no direct conservation knowledge, although there is a growing awareness amongst certain agricultural economists. The general deficiency in conservation, however, is reflected by the lack of cross-sectoral planning. NCDP has expressed the desire to appoint staff qualified in conservation issues, who could assist in evaluating development projects.

3.1.10 National Council for Scientific Research (NCSR)

P.O. Box CH 158, Lusaka
Telephone: 281081/6

The NCSR was established in order to assist the nation overcome the seemingly overwhelming bottlenecks to develop, through appropriate scientific and technological development. This is attempted through the use of science for social development. The body is responsible for approving and coordinating any applied scientific research, as well as for promoting the application of such research. The NCSR carries out research in the fields of agriculture, natural resources management, energy production, engineering and construction, medicine, mining, food technology, animal productivity and industry. In the past four years, the NCSR has assisted the Ministry of Commerce and Foreign Trade in the preparation of an Environmental Pollution Control Act (see 3.1.2 above). It is currently monitoring environmental pollution with emphasis on water quality.

Occasionally, the NCSR also assists in wildlife research. It also has a tree breeding unit. Because of the role and national position of the NCSR, its influence in natural resource conservation is quite significant. This also holds true on the international scene where the NCSR has a

resource programmes. The NCSR was host organisation during the preparation of the National Conservation Strategy.

Currently, the NCSR is coordinating a programme of agroforestry research as defined by the National Conservation Strategy. This is part of a regional initiative undertaken by the International Centre for Research in Agroforestry (ICRAF).

The NCSR is adequately staffed with Zambian technical and professional personnel though quite a number, especially in the areas of water resources and pollution monitoring, are expatriates. The training programmes run by the NCSR should help to meet the shortfall in the near future. The NCSR itself in 1984 prepared a directory of scientific and technological expertise available in Zambia.

3.2 PARASTATALS

3.2.1 Central African Power Corporation (CAPC)

P.O. Box 30233, Lusaka
Telephone: 214282 / 214436

CAPC was set up jointly by Zambia and Rhodesia (now Zimbabwe) in 1963. It is responsible for the running of Kariba North Bank HEP station.

A high level of environmental awareness in both the government and private sectors of Zimbabwe has led to the Central African Power Corporation being forced to participate in environmental impact studies accompanying the various proposed hydro-electric schemes on the Zambezi and elsewhere. The shortage of similar pressure from the Zambian community has virtually freed this corporation of its obligation to cooperate with the public or inform the public of its activities in Zambia. Intra- and inter-governmental coordination in the field of hydro-electric power development has a poor record in Zambia and Central Africa as a whole.

3.2.2 National Agricultural Marketing Board of Zambia (Namboard)

Kwacha House, Cairo Road, P.O. Box 30122, Lusaka
Telephone: 214833
Telex: ZA 42310

Namboard is a parastatal offering agricultural marketing services including:

- provision of pesticides (commonly DDT, Dieldrin and other organochloride compounds) and fertilisers;
- supply of cultivating and spraying equipment;
- fumigating and spraying services for post-harvest crop storage;
- food distribution (to deficit areas);
- supply of some seed such as maize; and
- marketing (Namboard is the principal grain handling organisation).

Namboard supports not only the larger farmers but, as far as possible, the small farmers participating in the LIMA programme. The 21 graduates are economists, business administrators and agriculturalists. There are no conservation elements in, or restrictions on, Namboard activities.

3.2.3 The National Food and Nutrition Commission (NFNC)

P.O. Box 32669, Lusaka
Telephone: 211724

This commission is concerned with imparting knowledge on a healthy diet, as a separate activity and in conjunction with many other programmes, such as IRDP and primary health care. They produce materials for use in schools, workshops and clinics, and prepare radio programmes. Advice is given on nutrition for those institutions that provide meals, such as prisons and some schools. The commission also monitors trends in the nation's nutrition by conducting surveys, etc. It is also involved in appropriate and resource-saving technology, such as solar driers for grains.

Five Zambian graduates are trained mainly in biology and nutrition.

3.2.4 National Housing Authority (NHA)

P.O. Box RW 50074, Lusaka
Telephone: 213501

This parastatal is involved in construction and property development, as well as providing professional services on a consultancy basis. It operates as a profit-making enterprise. NHA liaises with district councils for creating housing estates, usually at low cost, and is also involved with squatter upgrading in conjunction with aid projects and sites-and-services programmes. The consultancy division operates like any other private architectural consultancy; its urban planning section has recently been closed down due to a lack of work. There is no particular emphasis on energy conservation techniques. One or two of the 16 professional and 38 technical Zambian staff (there are 14 non-Zambian professionals) have training in environmental design.

3.2.5 Rural Development Corporation of Zambia (RDC)

P.O. Box 31957, Lusaka
Telephone: 213111

This parastatal operates various companies:

- Zambia Agricultural Development Company Limited (28 farms in three groups: ranching, dairy, mixed crops);
- Kawambwa Tea Company;
- Various agricultural processing companies such as Zambia Pork Products, Poultry Development Company, African Farming Equipment, Chipata Pork Processing Plant;
- Agricultural Finance Company (providing loans mainly to large commercial farmers but increasingly to smaller-scale farmer);
- Cattle Finance Company; and
- Rural Air Services Limited (mainly for farm spraying but also for tsetse control).

RDC and its subsidiary companies do not maintain a conservation policy and there are no conservation experts among the staff. RDC in particular carries out project appraisal almost exclusively by economists. Those in the field, such as farm managers, are aware of declining yields due to soil infertility, but do not incorporate conservation principles in their practice.

3.2.6 Zambia Consolidated Copper Mines Limited (ZCCM)

Main Office:
74 Independence Ave, P.O. Box 30048, Lusaka
Telephone: 818033

Mining Industry Technical Services:
P.O. Box 71, Kalulushi
Telephone: (02) 733401
Telex: ZA 56010

ZCCM is the parastatal which mines and processes copper, cobalt, lead and zinc, with 16 subsidiary companies providing supplies and services.

The section concerned directly with environmental issues is the Mining Industry Technical Services, whose staff include two pollution experts. Generally ZCCM is becoming more aware of natural resource issues. One of its policies is to diversify into farming.

Since the commencement of the commercial copper industry in Zambia, the industry has become the key sector in the economy. Although operations have been at a large scale for several decades, the discharge of effluent water, the disposal of other solid wastes and the dispersion of stack emission have not resulted in widespread environmental changes. Most of the impact is restricted to specific localities adjacent to each mine. To contain all these problems, ZCCM operates a water quality monitoring programme by each division. The company also deposits solid wastes and tailings in special dams. Current economic difficulties have already led ZCCM to undertake certain conservation activities, which have resulted in direct financial savings for the industry, particularly in energy and machinery costs.

ZCCM has set up an Industry Fuel and Oil Cost Savings Committee, which emphasises particularly the substitution of imported oil by hydro-electric power. As a consequence, most of the heavy equipment that would normally use oil has been at least partially electrified. Another of ZCCM's operations is the reclamation of plant and machinery that might otherwise be scrapped. In addition, engine oil residues are analysed to reveal the precise condition of the engine.

ZCCM is involved in generating other viable conservation projects and schemes. Currently, these include not only a commitment to diversify into farming but also to further develop the production of low-cost copper through the recovery of copper residues contained in previously discarded tailings.

3.2.7 Zambia Electricity Supply Corporation (ZESCO)

P.O. Box 33304, Lusaka
Telephone: 212128 / 211742 / 211726

ZESCO, in conjunction with the Central African Power Corporation and the Copperbelt Power Company, is the major parastatal responsible for electricity production and networking in Zambia. Over 90 per cent of Zambia's electricity supply comes from the three major hydro-electric stations at Kafue Gorge and Victoria Falls (and Kariba North Bank which is run by the Central African Power Company). These achieve self-sufficiency of electricity supply for Zambia and generate exports to neighbouring countries. Rural electrification is a major current policy although environmental analyses of transmission lines are not carried out. Neither have ZESCO carried out their own EIAs of new dams; however, they accept that there are both adverse environmental inputs and many multiple use possibilities of reservoirs and dam sites. ZESCO has been represented on the Kafue Basin Research Committee (see University of Zambia entry) by a senior engineer and hydrologist, who have actively participated in assessing and monitoring the various effects of flooding the Kafue flats for power generation. There is no staff, however, with special knowledge of conservation matters.

3.3 The University of Zambia (UNZA)

P.O. Box 31379, Lusaka
Telephone: 213221
Telex: ZA 44370

UNZA was established by an Act of Parliament (Act No. 66 or 1965) and had its first year of operation in 1966. The role of the university as spelled out by the Lockwood report, which paved the way for its establishment, was that "It must combine practical service to the nation at a critical time in its life with fulfilment of the historic purposes of a university as a seat of learning, a treasure house of knowledge and a creative centre of research". This two-fold objective continues to guide the university in its teaching, research and service activities relevant to the needs of Zambia.

In order to meet the needs of Zambia, the university has developed six institutions that have a direct role and concern in conservation and natural resources; these are:

- the School of Agricultural Sciences
- the School of Engineering
- the School of Environmental Studies
- the School of Natural Sciences
- the School of Veterinary Medicine, and
- the research units which include the Institute of African Studies, the Kafue Research Basin Project, the Rural Development Studies Bureau and the Technology Development and Advisory Unit.

3.3.1 The School of Agricultural Sciences

Telephone: 253952

The purpose of establishing the school was to train staff to meet Zambia's growing agricultural needs and help diversify the economy. The school had its first intake in 1968. The course takes five years, and the aim of the programme is to train general agriculturalists who are needed as coordinating officers in cooperative farming ventures, for extension and for the management of farms, while at the same time giving them an opportunity to specialise in one of the five basic agricultural disciplines offered by the school, agricultural engineering, animal sciences, crop sciences, rural economy and extension education, and soil sciences. Although the degree of specialisation is necessarily limited, the graduates have a suitable base on which to build when working in research stations and other advisory and teaching appointments. In 1983 a new degree programme to meet the needs of agricultural economics was introduced.

The school is staffed with 36 members; however, most of the staff are expatriates.

3.3.2 The School of Engineering

Telephone: 253194

The school was established in 1969 and comprised four departments (civil, electrical, mechanical and minerals engineering) but later, the minerals department developed into a fully fledged mining engineering school so as to meet the increasing needs of the mining industry. The purpose of the school is to provide the professional engineers required by Zambia. This is achieved through a five-year programme leading to the degree of Bachelor of Engineering. The programmes require that the student spends at least five months in approved industrial training during long vacations after third and fourth years of study.

By nature of the profession, the school has a role in conservation in making future professionals understand the environmental elements on their jobs and training; however, an environmental input in the courses is lacking.

The school appears to be well staffed, with 44 members.

3.3.3 The School of Environmental Studies

Ndola Campus, Kitwe
Telephone: (02) 210841

Zambia is unique among African countries in that as much as 43 per cent of its population is urban. Because of the existence of a highly developed industrial sector on the Copperbelt, there has always been a high concentration of population in that area. But in the past 20 years, the population in other towns has risen at a fast rate while that of rural areas has declined. This movement of people has created problems relating to the built environment and

has pointed to the need for university-trained skills for dealing with the environment in a rational and humane way. The construction and mining industry, the largest employers, felt the need to have locally-trained manpower in fields of architecture and quantity surveying. These two factors led to the establishment of the school in 1981.

The school offers programmes of study leading to degrees in architecture (a six-year programme), building and urban and regional planning. Architecture and urban and regional planning both include an element of landscape in the courses, but do not stress ecological criteria. However, practical work includes multi-disciplinary projects aimed at creating "total" environmental designs for given sectors of society. The establishment of this school will help to provide Zambia with manpower in a sector which is currently poorly staffed.

The university needs more staff for this school; currently there are 11 members.

3.3.4 The School of Natural Sciences

The school was established and had its first intake in 1966. From the outset, natural sciences has been an admitting school. It is a necessary entry school for those intending to study engineering, medicine, mining or veterinary medicine and agriculture. As a result it has a very large intake. Because of the critical shortage of manpower in science-based areas at the time the school commenced, it was decided to offer a broadly-based science degree which would equip graduates to respond flexibly to Zambia's growing needs. Later on, it was recognised that in addition to offering broad-based degrees, a need for specialisation was necessary. So in 1977, it was authorised to offer single subject majors in biology, chemistry, mathematics and physics. As with the general major degree, the duration of study is four years. The role of this school is that it provides manpower that has basic skills to carry out, biological, physical and chemical tests of environmental effects of industrialisation. In addition, a BSc. in Natural Resources is offered, which contains elements of soil science including soil conservation, sociology, climatology, remote sensing, land evaluation and other relevant skills (there are currently only a few students taking this programme).

The school is adequately staffed (102).

3.3.5 The School of Veterinary Medicine

In July 1975 it was announced that UNZA was to establish its own school of veterinary medicine to cater for the critical shortage of qualified personnel experienced by Zambia in the professional fields relating to animal health and production. The first intake was in 1982 under temporary premises. Parts of the permanent premises were occupied in June 1984. Most of the buildings of the school are still under construction.

The programme of study will last six years leading to a BSc. in Veterinary Medicine. For the development of the livestock industry in Zambia, it is felt that UNZA should seek to produce veterinarians who are competent in identifying and controlling the major diseases of domestic animals. This entails competence in handling pesticides - it is not known, whether the course will include knowledge of environmental effects of pesticides.

Being a relatively new school and owing to the shortage of Zambian veterinarians, most of the six members of staff are expatriates.

3.3.6 Research Institutes

3.3.6.1 The Institute for African Studies

P.O. Box 30900, Lusaka
Telephone: 215358

The institute was established to conduct research in the social sciences and related disciplines, with special reference to contemporary issues affecting national development. Founded in 1938 as the Rhodes-Livingstone Institute, it was incorporated in 1965 within the established university as the Institute of Social Research. It was enlarged in 1971 to include the Centre for African Studies and in 1977 to include the Manpower Research Unit.

The institute presently comprises five research units including those which cover community health and technology and industrial research, and maintains 15 faculty members.

3.3.6.2 The Kafue Basin Research Project

P.O. Box 31379, Lusaka
Telephone: 213221
Telex: ZA 44370

It is a multi-disciplinary unit that aims to investigate the effects of development in the Kafue basin. A considerable amount of work has been carried out on the ecological and social consequences of creating the Itezhitezhi dam. Recent work has concerned the effects of installing the Kafue hydro-electric scheme. There is discussion of extending the project to the Zambezi with the planned development of HEP on this river. The project relies mainly on teaching faculty drawn from various departments, but also employs a full-time researcher.

3.3.6.3 The Rural Development Studies Bureau

P.O. Box 30900, Lusaka
Telephone: 215358

It undertakes policy-oriented research into problems of rural development, to build up data and help to evaluate rural programmes. The aim is to provide a (largely sociological) depth of insight in the planning efforts of the country (7 staff).

In view of the need to develop a more broadly-based resource of potential expertise, CDC has embarked on a series of country studies - Natural Resources Expertise Profiles - of which the present one is the second to appear. These studies present:

> a brief overview of a country's environmental programmes and the supply of, and demand for expertise in that particular country;
>
> a survey of the capacities of local institutions, governmental and non-governmental, to meet the present and expected future demand; and
>
> a review and analysis of the expertise available within the country, including individual biodata summaries.

It is intended that these country studies will be of use not only to the sponsor, but also to the governments of the countries concerned, development assistance agencies and development banks, and others, in the preparation or implementation of national conservation strategies, programmes and projects planned within a framework of economic development. It is hoped that the reports will help identify areas of need, strength and weakness as far as environmental expertise is concerned, and ensure that this expertise is used to its best advantage. The expertise thus identified will be entered onto the consultant register and thereby made available to agencies and governments seeking advice on expertise available for conservation/development projects.

Although a number of other registers of expertise exist and are available for consultation, it was considered desirable to develop a single register that could be consulted to identify experts in the field of conservation for development. It is CDC's hope that the service offered through the register and country studies will facilitate and improve the selection of appropriate expertise, and particularly to enable searches to be carried out to the specifications of the requesting agency.

The computerised consultant register allows rapid searches for individuals with the required combinations of expertise and experience. These computerised files are backed by comprehensive manual files containing regularly updated information and full curricula vitae. With the assistance of its collaborative organisations CDC/IUCN is also able to draw on expertise and advice of individuals in fields not traditionally those of IUCN.

This Zambia study is the result of a brief but intensive survey over a period of a few weeks. It does not claim to be comprehensive or exhaustive, and the appearance of names in the list of consultants does not necessarily imply a recommendation by CDC. Such a service can be offered by CDC upon request. By demonstrating the value of country studies as a method of identifying a greater range of national expertise, it is hoped that this report will serve as a stimulus for further similar studies.

1. INTRODUCTION

The purpose of this report is to present a brief survey of the supply of, and demand for, expertise in Zambia in the disciplines of "conservation for development", i.e. natural resource conservation and management, natural sciences, environmental planning and control, and associated fields. The aim is to promote a more effective application of the available expertise to Zambia's natural resources problems and development needs. In particular, the report seeks to analyse the relevant capabilities of Zambian institutions and to document available Zambian expertise, so as to foster a greater use of indigenous manpower in future projects, and aid the more effective use and development of such manpower by the Government of the Republic of Zambia.

The report was commissioned by the Conservation for Development Centre (CDC) of the International Union for Nature and Natural Resources. In its aim of furthering the sustainable use of natural resources, CDC is compiling a comprehensive register of relevant expertise available throughout the world. CDC recognises the value of commissioning local expertise in developing countries, both within the experts' own countries and within the region. Although there is a growing number of relevant projects in Zambia and the region, local expertise has hitherto not been systematically identified. The current study attempts to remedy this. Although a particular effort has been made to identify Zambian nationals, it was decided that non-Zambians with relevant experience in the country should also be included.

The study was carried out in Zambia between December 1983 and July 1984. Data were received both from individuals and from organisations. Further information came from the Government Establishment Register, annual reports, development plans, bibliographies, prospectuses of the university and various training institutions, manpower development literature and personal communications.

Grateful acknowledgments for assistance are extended to Mr£J.£Madubansi, National Commission for Development Planning, Prof. A. Siwela, University of Zambia, Mr£N. Mumba, Department of Agriculture and many others who cannot be individually named. Biodata forms, prepared by CDC, were distributed to those individuals who were identified as having potential expertise; a summary of the expertise of respondents is presented at Section£5.

It is stressed that this report presents no more than the results of a necessarily brief but intensive survey and analysis. The appearance of individual names and the summary of individual's expertise implies neither a recommendation nor a guarantee of the individual's availability and willingness to undertake consultancy work. In addition, it is inevitable that certain individuals, and possibly institutions, may have been overlooked or have had to be excluded owing to a lack of response. CDC is making continual efforts to improve the accuracy and coverage of this report.

The following Section (2) surveys the current and anticipated demand for environmental expertise; this is achieved through an analysis of the main environmental problems and development aims in Zambia, together with a discussion of current environmental policies and programmes as well as those that are planned or appear likely. The current supply of available expertise is then discussed. Along with an analysis of the manpower training situation, which indicates the probable future supply, expected shortfalls in expertise are identified.

Section 3 discusses the capacity of Zambian institutions to engage in environmentally-related development projects, along with their current responsibilities and activities. These are described in six categories: government, parastatal, university, private, and locally-active UN, multi- and bilateral agencies. Section 4 deals with national and locally-active international NGOs.

Section 5, of which there will be a restricted circulation, contains an analysis of the different fields of individual expertise, both by the category of their expertise, and alphabetically by the names of individuals who responded to the survey.

2. ANALYSIS OF DEMAND FOR EXPERTS

2.1 The resource base and environmental problems

Zambia is a land-locked country in tropical southern Africa. Its 725,972 km^2 surface consists mainly of a plateau between 1,000 and 1,600£m above sea level. The elevation moderates the climate, which falls into two main seasons: hot and wet; cooler and dry. Rainfall decreases from north to south and is generally subhumid, the south in particular having experienced droughts in recent years. By far the major part of the country is covered with open "miombo" savanna woodland.

The population density on average is low, with 43 per cent of the 5,821,000 inhabitants (1980) settled in urban areas - one of the highest degrees of urbanisation in Africa. This, to a large extent, explains the pattern of land use as well as many of the environmental problems. Agriculture falls into two distinct classes: large-scale (usually European-owned) commercial farms along the most urbanised "line of rail"; and subsistence farming based on maize, mainly clustered around smaller rural settlements. Protein nutrition for many Zambians is highly dependent on fish. Despite a good fisheries potential, most fishing is still carried out on a small scale using simple technology.

Large areas of the country are very sparsely inhabited, the tsetse-ridden areas in particular form much of the National Park and Game Management Area estate. Much of this estate, which comprises 32 per cent of the country, is of global importance in terms of wildlife diversity and numbers. In some of the "fringe" areas close to these wider regions, as well as within rural settlements, traditional livestock grazing is important. Cattle are a form of wealth, but productivity and commercialisation are low in most of the 2,048,000 (1983) national herd. Exploitation of the large natural forest area (61 per cent) by large commercial concerns is minimal - rather, this area is subject to uncontrolled charcoal burning, fuelwood collecting and chitemene shifting cultivation. There is a small area (60,000£ha) of commercially-run pine and eucalyptus plantations, mainly in the Copperbelt and providing for industrial needs. The Copperbelt, as its name implies, is the centre for the mining industry, where cobalt and other minerals are mined and processed as well as copper, for which Zambia ranks fifth in world production. The energy supply for the mines, as for other industries, was previously based largely upon fuelwood and mineral oils, but is increasingly hydro-electric power. Most notable of the HEP developments are the Kariba Dam power stations, where what was once the world's largest man-made lake has caused considerable ecological change. Industry is consumer-oriented, producing more consumer goods than capital goods; as a consequence the country is very much dependent upon imported technology.

Unlike many countries in Africa, Zambia is not yet at a critical stage of environmental degradation. The problems are none the less severe in the more limited localities where they occur. Most environmental problems are related to one or a combination of the following causes:

- the rapidly-growing (7 per cent per annum) urban population is putting considerable pressure on resources, notably food and fuelwood production;
- conservation principles are lacking in much of Zambia's agricultural and industrial development, owing to factors such as ignorance, short-term economic pressure and the lack of necessary resources and capability;
- the environmental component is missing in development policy, planning and practice, and individual sectors and agencies are not obliged to consider the activities of other in carrying out their operations; and
- there is no coordination between the relatively weak agencies which have been set up to consider conservation.

This leads to six main environmental problems.

- Deforestation is caused mainly by large-scale agricultural clearance, resettlement schemes, and, on the edges of towns, by fuelwood cutting and charcoal manufacture. Other important reasons are the practice of chitemene agriculture and overcutting, for the forests are far too large for the Forestry Department to police. Woodland regeneration is especially hindered by overgrazing and burning.
- Rangeland degradation occurs particularly in the traditional cattle-rearing areas of Southern, Western and Central provinces. A shortage of dry-season grazing, together with an almost complete lack of grazing management and pasture improvement, renders the cattle unproductive. This, together with the very poor marketing structure, means that only 5 per cent of cattle are marketed each year. Hence cattle numbers on the rangeland increase further, exacerbating erosion and affecting grassland succession to favour the least palatable species.
- Soil erosion, caused mainly by water, is concentrated in relatively confined areas in all provinces except Luapula and Northern. It is especially bad in parts of Central, Southern and Eastern provinces where soils are less stable and usually more sandy, and there is a higher proportion of sloping, cultivated and grazed land. The main reason is neglect of soil conservation measures on commercial farms since independence. Other causes are poor farm practices following chitemene deforestation, as well as overgrazing, rural roads and farm tracks, and annual burning. In addition, the practice of monoculture and other changes in commercial farming sometimes change soil structure and texture and reduce soil fertility.
- Pollution is not yet a widespread problem. However, pesticide type, level of use and method of use are not controlled and problems are increasing with greater pesticide use. Pollution due to mining is reasonably well controlled; industrial pollution is not as well controlled and is quite serious in its restricted locations, for example at Kafue. Control of air pollution is less well developed than that for water pollution.

- In the field of environmental health, although 48 per cent of the population in the 10 large urban areas have a private tap with a clean water supply, 22 per cent suffer contaminated sources or an inadequate supply. Overloading of sewage works is a common reason for the spread of diarrhoeal diseases. Other water-borne diseases are widespread, such as bilharzia, and malaria is a particular problem. The high cost of food in towns has led many to practice unsatisfactory and illegal forms of urban agriculture, such as the growing of maize close to houses which harbours malaria vectors owing to the damp conditions maintained in the crop.
- Wildlife problems are growing. Wildlife habitat is continually being reduced by such factors as deforestation or alteration in the water regime caused by hydro-electric development. A lack of protected area management is causing its own problems, such as localised elephant grazing. Perhaps the most dramatic difficulty is the well-organised poaching which, despite increased anti-poaching activities, continues to threaten the rhino and elephant populations in particular.

2.2 Main development priorities

The government of independent Zambia inherited an economy which was almost entirely dependent on copper, particularly for foreign exchange earnings. With the considerable fall in copper prices since the 1970s, the participation in the liberation wars of the region and consequent transport difficulties due to the landlocked position, together with high oil prices, drought, inflation and the world recession, Zambia has had to look seriously at restructuring the economy. Hence development priorities are currently being negotiated. Themes of recent years which are likely to be continued and strengthened are:

- the highest priority to rural development, notably a considerable increase in investment in agriculture, aiming in particular to commercialise the small farmer, achieve self-sufficiency in staple foods and export certain cash crops;
- diversification of the mining sector;
- employment creation in the towns. This will particularly be aided by an increase in manufacturing and agricultural product processing, especially for import substitution and by using local materials; by diversification in rural areas; by decentralisation of planning; and by the "Zambianisation" of manpower in professional positions and, in the training institutions, by increasing the number of qualified scientists and technicians as opposed to economists and other arts-trained personnel. The emphasis on Zambianisation is of particular relevance in this study.

Until recently, natural resources conservation has not figured amongst development priorities, and its execution has been at a low level. However, the United Natural Independence Party and the Government adopted a Natural Conservation Strategy in July 1985. This strategy outlines a number of priority areas where coservation activity should take place, and various projects are being planned. Considerable interest is being expressed in strategy-related projects, which is already increasing the demand for natural resource expertise.

2.3 Major Environmentally-related programmes

At present, those programmes which deal specifically with natural resources conservation and environmental issues are very small as regards both manpower and the financial resources involved. They form part of the work of the individual agencies concerned with conservation, and very little of this takes the form of specific projects with aid agency support. These small programmes are described in Section 3, under the appropriate organisation's heading. That there are no large or multi-sectoral programmes in operation is mainly owing to the low priority of conservation in government policy and to the lack of coordinating framework for such activity. At present there is no agency officially responsible for, or advocating, large-scale and multi-sectoral environmental improvement. However, there are a few programmes of resource development which have an environmental component, or at least an opening for such a component. These are described below.

2.3.1 Industry and energy programmes

- The "Industrial Energy Conservation Programme" is the first part of the Energy Saving Plan of Action to be put into practice. The 20 biggest oil-consuming industries have been identified, and four pilot industries have been chosen to define and implement relevant energy conservation measures. This is being coordinated by the Department of Energy.

- Diversification in the mining industry. Zambia Consolidated Copper Mines Limited, a parastatal, has been investing in farmland, fuelwood plantations (as opposed to fuelwood gathering in natural woodlands), the substitution of electricity for oil fuels, oil conservation techniques, etc.

2.3.2 Urban programmes

- Of major interest are the self-help housing schemes, many of which are run by Human Settlements of Zambia. These are increasingly involving the use of locally-available materials, e.g. soil/cement blocks, farm product processing, gardening and tree planting.

2.3.3 Rural Development

- Integrated Rural Development Programmes are going ahead at provincial level, aided by various bilateral agencies. Implementation is more advanced in Eastern and Northern provinces. The Rural Development Programmes concentrate on one district in each province and include such items as roads, schools, clinics and water supplies, as well as agricultural development. They are designed to strengthen decentralisation as well as to provide experience and support for the provincial planning units of National Commission for Development Planning.

- The LIMA Programme is one of the most important government initiatives. It is already having considerable success in achieving its aims of boosting the viability of the small farmer through extension, material support and marketing. The programme has contributed greatly to the reduction of rural-urban migration and has actually encouraged a "back-to-the-land" ethic in some areas.

- Other projects of interest are the current World Bank-funded reappraisal and strengthening of extension services; the proposed EEC-funded regional tsetse eradication project; the changing emphasis in policy, although barely yet in practice, of the Forestry Department towards community fuelwood plantations and agroforestry, and the related FINNIDA-aided expansion of Mwekera Forestry College; and the NORAD-funded strengthening of Save the Rhino Trust's anti-poaching activities in the Luangwa Valley.

2.4 The demand for experts

2.4.1 Current demand

The government is by far the major employer of graduates in natural resource conservation management. There are few such graduates employed in the private commercial farms and businesses and none in private, full-time consultancy work.

The overall demand for agriculturalists is higher than supply; certain more specialised positions are currently vacant or are filled by people with inadequate training. This reflects various factors: notably the policy to employ Zambian staff wherever possible but also the fact that most formally-qualified Zambians are relatively inexperienced. Most have graduated within the last six years (often having taken their degrees in mid-career). The level of their training is not yet adequate for some of the government posts, and those with postgraduate training are in short supply. Indeed, many graduates at bachelors level, e.g. agriculture and agricultural economics are in jobs unconnected with agriculture and a few are unemployed.

Regarding forestry, pollution, wildlife management and the more "multi-disciplinary" areas of conservation, however, the demand for expertise is currently low. In general, this is matched with a low supply of the available experts; when further expertise is required, for example in department expansion, junior staff members are sent for training, often overseas. This reflects the country's lack of expansion in environmental activity; the dearth of current projects will maintain this situation for the near future. Whereas in agriculture, there is a reasonably coherent career structure and an established economic need for the discipline, other natural resources experts are scattered, often numbering only one in an organisation with little coordination between them. This means that, while individual experts may recognise the need for further conservation expertise in their own, or a related organisation, it is often difficult to convince policy makers of this, and work which should be carried out is either not done or is performed by someone of inadequate training.

Generally, even though the number of relevant posts in the government structure is small, 10 per cent of these posts remain unfilled owing to lack of qualified personnel, or to financial constraints.

2.4.2 Anticipated demand

The demand for experts within the government-recognised natural resource disciplines will undoubtedly increase. The main areas for increase will be:

- Agriculture. This should involve the largest increase in numbers, particularly because agriculture is now regarded as the fulcrum of development. Relevant areas which will be emphasised are extension, irrigation, genetics and breeding, and although this last will probably require fewer numbers, and multiple-use techniques such as agroforestry.
- Forestry. Community forestry will be the main area for increase in personnel, although it is currently proposed that a large number of existing staff will fill the required positions through in-service training.
- Veterinary. The expansion of commercial beef production and the proposed greater eradication of tsetse will lead to a higher requirement for vets.
- Fisheries. Fisheries and aquaculture expansion, particularly as part of integrated schemes, is anticipated for the future.
- Energy conservation. This is an expanding field in Zambia, and the implication is that further engineers and architects with knowledge of energy conservation technique will be required.

In contrast, the demand is less predictable for wildlife biologists, soil and water conservationists and environmental planners, i.e. those not necessarily related solely to development work. It would undoubtedly increase if certain current constraints are removed:

- the lack of an environmental input in planning and project implementation in any sector;
- the lack of mandatory environmental impact assessments for certain projects; and
- the lack of a coordinating body for conservation issues.

There are certainly trends in Zambia's development which point towards the removal of these constraints, and some initiatives (notably the National Conservation Strategy) are aiming to speed up the trend. It is anticipated, however, that even when a routine environmental input does become a more common occurrence, the demand for experts will increase fairly slowly at first. Rather than employing new expertise, some disciplines such as wildlife biologists and ecologists will be called upon to widen the scope of their work; hence "pure" ecologists would have to work as applied ecologists, for example in EIA studies. One area, perhaps, for a

more rapid increase in numbers is the private sector; more planners and architects with knowledge of ecological planning, and pollution advisors for industry are envisaged. This will particularly be the case if new planning and industrial regulations appear.

A further factor which would seem to lead to an increased demand for expertise is decentralisation. For any decentralised process to be effective, there is necessarily a certain duplication of expertise (so that the capital's plans and directives are at least understood by each of the different provinces and districts). At present, virtually all natural resource conservation planning is centralised. Hence progress in decentralisation alone will increase the demand for expertise in the nine provinces, particularly within the provincial planning units. Increasing the scope of conservation activity in addition will multiply this increased demand.

2.4.3 Manpower development

The capacity and activities of each of the following institutions is described fully in Section 3.

- University of Zambia (UNZA)

  School of Environmental Science
  School of Natural Science
  School of Agriculture
  School of Engineering
  School of Veterinary Medicine (opened June 1984).

  Between 1979 and 1983, only 31 per cent of graduates were in the above fields plus medicine, mining and engineering.

  Institute for African Studies.

- Natural Resources Development College

  (diploma level agriculture, agricultural engineering)

- Zambia College of Agriculture
  Mpika College of Agriculture
  Zambia Institute of Animal Health

- Mwekera Forestry College

Environmental Science is being introduced as a compulsory subject in primary and secondary schools. If remaining problems are solved - such as how to relate the syllabus to current examinations (which have few elements of natural resource management) and how to continue the subjects with respect to higher education and career development - then some of the longer-term expertise needs may have greater chance of being met.

Postgraduate training in relevant disciplines continues to be undertaken mainly in foreign countries, usually as part of aid programmes of the UK, USA and many Eastern bloc countries among others. The postgraduate intake at UNZA, however, is increasing.

2.4.4 Particular shortfalls in supply that are likely to arise

From the above, it may be concluded that shortages in expertise are likely to develop in the following areas over the next five or so years. (A very rough estimate of the order of numbers is bracketed.)

- environmental aspects of human settlements - notably planners with experience in environmental planning and architects with experience of e.g. energy efficiency and appropriate technology (10);
- crop and livestock geneticists (5);
- irrigation engineers (5);
- agroforestry and community forestry (10);
- management of natural ecosystems for productive purposes, i.e. rangeland managers and watershed management specialists (2-5);
- fisheries (current staff are very underexperienced) (5);
- pollution advisors (5);
- energy conservation engineers (5);
- lecturers in relevant disciplines for the various colleges and university (10-20);
- other "conservation educationalists" (1-5);
- experts in "natural disasters", particularly planning for droughts (1-3); and
- community motivators - not graduate level (20).

If an environmental planning framework becomes established, for example of the sort being prepared according to the recommendations of the National Conservation Strategy, then a particularly important shortage (strategically, if not in terms of numbers - perhaps five will be required) will appear in respect of environmental planners with qualifications and experience in more than one discipline. A brief search of existing expertise to fulfil such a role (conducted by the strategy team) revealed a very few individuals who were not already in great demand in their current posts. Whilst training can fill some gaps, multi-sectoral natural resource management experience in Zambia is still limited. This implies that the country will continue to rely on expatriate help in this particular area. It also leads to the recommendation that the allocation of existing qualified staff should be carried out to maximise their experience - by encouraging them to work in different sectors, both in the "developmental" side and the "conservation" side. At present, for example, those who are qualified in ecology or wildlife biology have little understanding of the economics of natural resource use. In contrast, agriculturalists are not familiar with the whole range of other legitimate demands upon the land (including that for wildlife conservation). There is possibly no Zambian who has played a significant part in a full-scale environmental impact analysis; this may prove to be a very serious short-coming.

3. LOCAL INSTITUTIONS AND THEIR CAPACITIES

3.1 Government Institutions

3.1.1 Ministry of Agriculture and Water Development*

Agriculture is Zambia's priority development sector, particular emphasis now being given to increasing the effectiveness of the small farmer as a means of generating food self-sufficiency and eventually surplus, and of promoting egalitarian rural development.

The defined objectives of this ministry are to:

- stimulate the agriculture sector to produce sufficient food for the nation;
- contribute to government revenue;
- generate export earnings;
- generate employment; and
- ensure that increased output and revenue improves the quality of life among the people by stabilising prices.

The ministry is a relatively large one in terms of its funding and staff allocation and attracts considerable outside assistance. The following organisations are supported:

3.1.1.1 Agriculture Department including Extension Branch

P.O. Box 50197, Lusaka
Telephone: 213551

The department's bias is strongly towards increasing productivity through appropriate means; its professional-scale staff number around 80 and cover food, livestock, cotton, oilseeds, tobacco, dairy and treecrops, and there are three ecologists. At present there is a growing emphasis on agroforestry but only one specialised senior citrus and senior treecrop officer. There is a general concern for conservation but little mandate for direct conservation activity. Certain of the staff are seconded to integrated rural development programmes. At the field level, agricultural assistants and supervisors (extension officers) tend to specialise and have little knowledge of conservation, although there is cooperation with the Forestry Department on tree planting.

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* The pesticides committee is currently constituted under this portfolio, although it is currently inactive.

For the purposes of this report two divisions of the department are worth note. The Land Use Services Division is responsible for land use planning for agricultural (largely crop) projects. Thirty-nine professional staff are primarily land use planners, with two ecologists, three soil surveyors and eight farm management officers.

The Agriculture Department considers this division its "conservation" wing. Its mandate is to carry out:

- catchment conservation planning (including roads, water development and soil conservation works);
- farm planning;
- soil conservation (two professionals are seconded to a works unit) - mainly on larger farms;
- settlement schemes;
- project planning, e.g. rural dairies, tobacco schemes, crop production - for other ministries; and
- surveys and feasibility studies, including soil and land capability surveys, measurements of areas, agroeconomic and soil conservation surveys.

However, despite some very able personnel at the top level, activities actually carried out are small-scale, small in number and confined to the agriculture sector. For example, land capability surveys are not multi-disciplinary. Land use planners in the provinces are able to give some advice on conservation to farmers, within the limits of funding and manpower constraining the division.

The Agricultural Research Division is concerned with improving the productivity of crops (more particularly than animals) under Zambian conditions. Of particular relevance to conservation are activities to create appropriate technology for grain storage (Mt Makulu Food Conservation Unit), investigations into correct dosage of fertiliser and pesticides in Zambian soil, selection and improvement of more drought-resistant crops such as sorghum. Despite a growing emphasis in agroforestry, there is only one tree crop officer. The 66 professional staff are based at headquarters and regional research stations, the largest, Mt Makulu, being just outside Lusaka.

3.1.1.2 Department of Veterinary and Tsetse Control Services

P.O. Box 50197, Lusaka
Telephone: 213551

This is a highly decentralised department, whose responsibilities are again divided between two divisions.

The Veterinary Services Division is charged with livestock disease control, especially amongst traditional cattle, as a way of improving their productivity and offtake and hence reducing overgrazing pressure. Activities are mainly confined to administering drugs and vaccines and a certain amount of quarantine.

The Tsetse Control Services Division acts as a watchdog and controls the tsetse fly vector of trypanosomiasis. There is an awareness of the effects of tsetse control, in particular, on the environment and certain officers are concerned to monitor these effects, but at present there are not the resources to do more than a small amount of this. A development programme is, however, under way to reduce environmental impacts using insecticide- impregnated screens and traps.

3.1.1.3 Department of Water Affairs

P.O. Box 50288, Lusaka
Telephone: 215281

The department is responsible for construction of facilities, and planning and control of the use of water resources to provide clean drinking water to the Zambian people. In practice, their work is confined mainly to constructing wells, boreholes and dams or weirs, rural water supply schemes, canal development and hydrological gauging stations. Because of a lack of trained personnel and equipment, most of their work is contracted to the private sector; as such the department acts as sole government consultant in awarding contracts and preparing water supply schemes. However, the 34 professional staff are mostly engineers and hydrologists, and there is no personnel with training in the wider aspects of their work, such as catchment and water conservation. As a general observation, there is confusion over water rights and water use regulations in Zambia.

3.1.1.4 Fisheries Department

P.O. Box 100, Chilanga
Telephone: 278366

This department is responsible for conserving and achieving self-sufficiency and export in fish by properly managing the fisheries of Zambia's lakes and rivers and by promoting fish culture. However, in view of this responsibility and the great potential of fisheries for Zambia, the department is in a weak position. Thirteen professional staff are responsible for the divisions of research, fish culture and extension. The fish training division is run by technical scale staff only, and many of the five training centres run few or no courses for fishermen because of a lack of manpower and resources. In general, even the professional staff lack adequate training.

The five research units have had reasonable success at providing basic information on the major fisheries but again most stations are manned by technical staff only.

The fish culture division has recently received considerable strengthening under the FAO/GRZ aquaculture development project which includes the rehabilitation of Chilanga headquarters fish farm and the investigation of suitable local species and techniques.

3.1.1.5 Ministry of Agriculture and Water Development (MAWD) Planning Division

P.O. Box 50197, Lusaka
Telephone: 213551

The Planning Division is principally responsible for drawing up projects to fulfil the objectives of the ministry. In particular, it is drawing up a five-year investment plan to carry on from the priorities identified by the recent Food Strategy Project. Its 56 staff are aided by a considerable expatriate team; nearly all are economists and agricultural economists, with the addition of a few sociologists. Whilst having expressed interest in notions of long-term sustainability, their emphasis and expertise is on short-term planning. However, adaptive research is stressed.

3.1.1.6 Training institutions

Palabana Agricultural Training Institute
Chapula Horticultural Training Institute
Kalulushi Farm College
Popota Tobacco Training Centre
38 Farmer Training Centres

The above have few professional staff - six between them - and are run with a few technical scale staff, at around 50 per cent capacity, largely because there are insufficient funds to transport farmers.

At the Natural Resources Development College (NRDC), 31 professional scale staff run diploma and certificate courses in agriculture, agricultural engineering, veterinary studies, etc. The expertise of the staff and the contents of the courses do not reflect the urgent need for conservation in Zambia. There is a short lecture series on "conservation and irrigation" within some courses and there is some emphasis on soil conservation in the water development and agricultural engineering course.

At three other colleges, the Zambia Institute of Animal Health, Zambia College of Agriculture and Mpika College of Agriculture, 25 professional staff run courses more or less along the same lines as NRDC.

3.1.1.7 The National Farming Information Services

P.O. Box 50197, Lusaka
Telephone: 213551

This body is responsible for producing written and graphic materials in local languages for MAWD, liaison with the media, including preparation of radio programmes in particular.

3.1.2 Ministry of Commerce and Industry

P.O. Box 31968, Lusaka
Telephone: 213767

This ministry is primarily concerned with providing incentives to investors, regulating foreign trade, export promotion, price control and patents. Part of its mandate is to secure control of industrial pollution, but very little activity is carried out. Because of its lack of competence in the field, the ministry commissioned the National Council for Scientific Research to draw up a draft "Environmental Protection and Pollution Control Act". This draft act, which proposes various inspectorates for fields such as natural resource conservation and noise pollution, and a related board, was referred back to the ministry two years ago but nothing has come of it since.

The ministry has been involved in looking at ways in which natural resources can best be utilised. The main examples are the EEC-funded wildlife utilisation feasibility study and the proposed, but aborted Lochinvar pilot project, but it is behind many other ministries in acting on such studies.

The Village Industry Service, run at present by administrative-scale staff, aims to encourage the processing of natural resources by local communities.

In general, the ministry is not conversant with ways of ensuring that industrial exploitation of Zambia's natural resources is carefully controlled and monitored.

3.1.3 Ministry of General Education and Culture

P.O. Box 50093, Lusaka
Telephone: 211100

This ministry is responsible for developing the curricula of primary and secondary schools, running those schools, the library service, examinations, cultural services, and educational broadcasting and Orbit, a magazine for youth.

Notions of wildlife are not included in the current upper secondary schools' curriculum, which is designed to achieve success in Cambridge certificate examinations. However, at junior secondary school and primary school, some aspects of conservation are covered in social studies (principally man's interaction with the land) and environmental science (which, despite its title, is equivalent to general science). In cooperation with the National Conservation Strategy, a new environmental science syllabus for primary and junior secondary is being drawn up by the Curriculum Development Centre, to include two courses dealing directly with conservation.

The ministry gives its blessings to the Wildlife Conservation Society's Chongololo and Conservation clubs (or which 20 per cent of school children are members), but offers no further support. Orbit magazine frequently carries features on natural resource issues.

In general, despite some specialised knowledge of natural resource issues in the Curriculum Development Centre and amongst a very few secondary school teachers, general awareness is low.

3.1.4 Ministry of Higher Education

P.O. Box 50093, Lusaka
Telephone: 219744

This ministry is responsible for tertiary education at the teachers' training, trade and technical colleges, including curriculum development and production of books.

Currently, teacher training gives almost no emphasis to natural resource issues, particularly for trainee primary teachers who have to cover all subjects. However, it is expected that this will have to change with the production of teachers' guides for the new environmental course (see entry on Ministry of General Education and Culture above).

3.1.5 Ministry of Lands and Natural Resources (MLNR)

P.O. Box 50694, Lusaka
Telephone: 214988

This ministry is the key authority for land tenure, and for the conservation and development of natural resources outside the agricultural, water and fisheries sectors. The Government of the Republic of Zambia is signatory to CITES through the ministry.

Whilst the ministry includes some superior expertise, it suffers in general from a lack of manpower with the necessary multi-disciplinary background in addition to their specialisations, a lack of coordination both between its different departments and with other ministries, and very inadequate funding, particularly from overseas aid. By and large, the lack of professional manpower in the ministry (as opposed to its departments) frustrates smooth running and communication. However, one of the roles of the National Conservation Committee and Secretariat set up in the Ministry in October 1985, is to plan Ministry activities and develop the necessary coordination. In addition, the new body is charged with the responsability of developing projects and activities deriving from the National Conservation Strategy, and coordinating their implementation.

The following departments fall under the ministry:

3.1.5.1 Forest Department

P.O. Box 70228, Ndola
Telephone: 2251

The Forest Department manages a gazetted forest estate, which at present stands at 9.87 per cent of the country's land area. It is responsible for 7,000£ha of pine and eucalyptus plantations in all the provinces except the Copperbelt, where the plantations have recently become the responsibility of Zambia Forestry and Forest Industries Corporation ZAFFICO, a new parastatal.

The department also has jurisdiction, although with limited enforcement capability, over certain forest matters in non-gazetted areas, e.g. stumpage, education. Emphasis is turning towards community

3.3.6.4 The Technology Development and Advisory Unit

It is a research, development and advisory unit that aims to develop appropriate technology for rural industries, covering energy and natural resource use so as to stimulate progress of rural areas towards self-sufficiency. Currently, the five staff are working on (among other things) developing efficient domestic woodstoves.

3.4 Consultancy Firms

Zambia relies heavily on the expertise of its government departments, technical assistance from aid agencies and, although rarely, consultancy firms from overseas, for advice on conservation and development issues.

In the urban sector, a considerable amount of town planning and architectural work has been performed by Doxiadis - notably Kafue New Town and the Lusaka Structure Plan (the latter still in use although increasingly out of favour). Doxiadis, a Greek international firm based in Athens, once maintained a Lusaka office, but pulled out some time ago. Other foreign and international firms occasionally perform work, but much less commonly nowadays. There are various reasons for this decline: the shortage of foreign exchange to pay consultants in Zambia, the policy of Zambianisation, as well as the economic recession making it increasingly difficult to afford such services. However, one Zambian firm, ASCO (Zambia) Limited (see separate entry) dominates the field. Otherwise the National Housing Authority (see separate entry) provides a service. The few Zambian architectural consultancies are all small and with little or no specialised knowledge of the environmental aspects of their work.

In the field of forestry and agriculture, no Zambian consultant firms were brought to the author's attention by the relevant government agencies, or were listed in the 1984 telephone directory. The government departments and the large agriculture suppliers, e.g. ICI Chemicals, provide specialised services. However, the Commercial Farmers Bureau (see separate entry) provides a range of services to members and others, and an English firm currently maintains a large office.

3.4.1 ASCO (African States Consulting Organisation) Zambia Limited

P.O. Box 31340, Lusaka
Telephone: 215478
Telex: ZA 40060 asco

This firm is fully registered in Zambia, but is affiliated with ASCO offices in other African countries, Qatar and Abu Dhabi. The Zambian branch currently maintains 12 highly qualified staff, mainly in the fields of (waste) water treatment, soil engineering and construction engineering. Other professionals - notably in architecture and planning - are brought in as required. There is no particular expertise in landscape architecture or emphasis on environmental design.

Recent projects in Zambia have included:

- feasibility for re-routing Great East Road to Malawi;
- urban development plans for Ndola, Livingstone, Luanshya, Chililabombwe, Kasama, Mansa and Solwezi;
- feasibility for site selection and layout of 16,000 sites-and-services plots;
- study for road crossing Zambezi River;
- design of water supply and treatment for eight of the larger Zambian towns;
- design of sewage schemes for Livingstone, Ndola, Luanshya;
- design and supervision of several hundred kilometres of roads and 20 bridges in rural and urban areas of Zambia; and
- various factories, offices and houses.

3.4.2 Landell Mills Associates

1 Chaholi Road, P.O. Box 33000, Lusaka
Telephone: 252424
Telex: ZA 40090

This English firm, with an office in Lusaka to serve the region, has carried out various projects in Zambia within the last few years:

- feasibility, site selection and design for a fish farm;
- technical appraisal for wheat and soya beans farming;
- study for commercial farmers bureau on production costs and pricing policy for five major crops; and
- appraisal of maize and beef-fattening projects.

At present, the 11 staff based in Lusaka are providing the management for the Eastern Province Agricultural Development project over the next five years, funded by the World Bank. Thirty other experts are available at the central office in Bath, England.

3.5 United Nations Programmes

The policies of the various assistance agencies regarding conservation result, of course, from the respective decisions of their headquarters and governments. A discussion of this is outside the scope of this report and is not included. Since the projects and, more especially, the staff alter with each year, it would not be valuable to present a detailed analysis of the current situation. Hence an outline only of the involvement of each agency in relevant conservation/development projects is given below.

3.5.1 Food and Agricultural Organisation of the United Nations (FAO)

P.O. Box 31966, Lusaka
Telephone: 216625

Food conservation, fertiliser aid, village workshops such as blacksmiths, training in tsetse and tick control, in-service agricultural training, industrial training, IRDP - credits and marketing - agriculture development and training, oilseeds development, irrigation experiments and extension including development of national irrigation research station, wood consumption survey (due to start in 1984), coffee production, and the Animal Disease Control Project at the Central Veterinary Research Institute at Balmoral near Lusaka.

3.5.2 United Nations Development Programme (UNDP)

P.O. Box 31966, Lusaka
Telephone: 218633

UNDP coordinates UN projects and gives special attention to population census and statistics, support to Institute for Economic Planning and Management.

3.5.3 United Nations Environment Programme (UNEP)

P.O. Box 31966, Lusaka
Telephone: 218633

The Desertification Branch is currently investigating possibilities for assisting Zambia. The Lower Zambezi Watershed Management proposal is still being discussed in Zambia and further funds being located. There is uncertainty as to government capability to manage the project. UNEP is also

3.5.4 United Nations Industrial Development Organisation (UNIDO)

P.O. Box 31966, Lusaka
Telephone: 218633

Relevant projects include small-scale industry technical assistance, agricultural products cannery, support to small industry development organisation and village industry service.

3.6 Other Multi-Lateral and Bilateral Organisations

3.6.1 Belgium

Royal Belgian Embassy
P.O. Box 31204, Lusaka
Telephone: 252312 / 252512

Assistance to Natural Resources Development College, pest control.

3.6.2 Canada

Canadian International Development Agency (CIDA)
P.O. Box 31313, Lusaka
Telephone: 216161

Various agricultural projects including assistance to the Department of Agriculture on wheat production.

3.6.3 European Economic Community

P.O. Box 34871, Lusaka
Telephone: 250906

Various projects deriving from the EEC-funded "Operation Food" programme, an initiative to increase the viability of the small farmer, regional tsetse eradication project (which will have considerable environmental implications), and a few other small conservation initiatives, such as tea production with fuelwood conservation (for drying the tea).

3.6.4 Federal Republic of Germany

Embassy of the Federal Republic of Germany
P.O. Box 50120, Lusaka
Telephone: 217449

Integrated Rural Development Project in North Western Province.

3.6.5 Finland

FINNIDA, Finnish Embassy
P.O. Box 30937, Lusaka
Telephone: 214645

Main areas of assistance are forestry and transport. Projects include forestry extension and training (including support to Mwekera Forestry College), a sawmill complex, forest products research, supply of roadmaking equipment, agricultural extension in Luapula Province, pig breeding, support to agricultural cooperation in Western province, "practical subjects" education, electrification and a long-term (20-year) electricity supply strategy.

3.6.6 International Red Locust Control Organisation for Central and Southern Africa (IRLCO-CSA)

P.O. Box 420037, Mbala
Telephone: 450428

This organisation, with its headquarters in Zambia, is a joint undertaking of Botswana, Kenya, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Uganda, Zimbabwe and Zambia. The largest contributor is Zambia (23 per cent funds). FAO supports the organisation. The purposes are:

- to carry out routine surveys in areas where locust epidemics are likely, using ground vehicles and aircraft (e.g. Kafue Flats, Mweru);

- to conduct control spraying when outbreaks occur; currently Fenitrothion is used for adult locusts and Dieldrin for nymphs; and
- to research ways of making operations more effective; within limited resources, research on spray application and vegetation mapping of outbreak areas is being carried out.

Due to concern being raised in many member countries about the use of Dieldrin, the screening of other possible insecticides is planned. Laboratory facilities at Mbala do not permit this. However, the delayed move to new headquarters at Kasama, Zambia, is expected to alleviate the problem. IRLCO-CSA is also expanding its operations to include other pests: the quela (grain eater) and army worm.

At professional level, there are three in top management, three scientists and seven field officers.

3.6.7 Netherlands

Royal Netherlands Embassy
P.O. Box 31905, Lusaka
Telephone: 250468 / 250945
Telex: ZA£42690

Food strategy, integrated rural development project and associated other projects in Western Province.

3.6.8 Norway

NORAD, Norwegian Consulate
P.O. Box 34570, Lusaka
Telephone: 213359

Soil survey, support to Save the Rhino Trust for anti-poaching activities in Luangwa national parks, feasability study for an integrated resource development project in South Luangwa National Park and Lupande Game Management Area (identified as a possible pilot project of the National Conservation Strategy)

3.6.9 Sweden

SIDA, Royal Swedish Consulate
Kulima Tower, P.O. Box 30788, Lusaka
Telephone: 215808

Support to IRDP in Northern, Luapula, and particularly Eastern Province where a soil concentration and agroforestry programme forms part of the IRDP, to the planning unit in the Ministry of Agriculture and Water Development and the adaptive research planning team in Luapula, agricultural extension and training (Mpika and Monze Agricultural Colleges, NRDC and the Lima programme), Zambian Cooperative Federation and the Cooperative College, the Women's Agriculture project, seed production and marketing, assistance to the Department of Lands and Survey and primary health care.

3.6.10 United States

USAID
P.O. Box 31352, Lusaka
Telephone: 214911

USAID emphasises ways of solving relatively short-term economic problems, such as Zambia's growing national debt, mainly by aiding agricultural development: commodity loans, fertiliser and farm equipment, training, support for the Ministry of Agriculture and Water Development's adaptive research planning team. Attention is increasingly concentrated on aiding the small farmer.

3.6.11 United Kingdom

Overseas Development Agency (ODA)
British High Commission, P.O. Box 50050, Lusaka
Telephone: 216770

Over 78 per cent of available UK funds are disbursed in technical assistance and training (the latter mainly by sending Zambians to study in the UK). Major relevant projects include the IRDP Northern province (based at Mpika), machinery (tractor) renovation and training of mechanics and agricultural chemicals supply.

3.6.12 World Bank

P.O. Box 34410, Lusaka
Telephone: 217321

The World Bank produced sectoral reports "Agriculture Sector" and "Energy Sector". Current work is mainly capital assistance: coffee production (small-holder support and two large estates), in-service agriculturalist and farmer training, pine and eucalyptus plantations (17,500£ha planned), logging and sawmilling, small-holder dairy development, extension and marketing services in Southern and Eastern provinces, rural water supply, education generally, petroleum exploration, technical reorganisation of coal mining, rehabilitation of the copper industry, railways development and extension reappraisal project.

3.6.13 Other active international agencies

These include the African Development Bank, Commonwealth Development Corporation and Arab Bank for the Economic Development of Africa.

4. NGOs AND VOLUNTARY ORGANISATIONS

4.1 National NGOs

4.1.1 Commercial Farmers' Bureau

VTA House, Cha Cha Cha Road, P.O. Box 30395, Lusaka
Telephone: 213222

This association represents the interests of its 900 members, who are grouped into 12 associations throughout Zambia. The majority of the members are white farmers with the largest farms. Accused of being "obsolete" in 1980, the bureau has since regained the confidence of the government, participating in price negotiations and agriculture policy decisions. Recently, the bureau made attempts to agree a voluntary code of practice with pesticide manufacturers and dealers, but this fell through. The bureau has a small secretariat and produces the monthly magazine Productive Farming (circulation 1,550). In addition, they provide a consultancy service to farmers.

4.1.2 Human Settlements of Zambia (HUZA)

P.O. Box 50141, Lusaka
Telephone: 218660 extension 522

This organisation has been responsible for many self-help squatter housing upgrading schemes, notably around Lusaka. Working as a "go-between" with both the City Council and local communities, HUZA trains community workers and organises house construction and garden and tree planting. Various conservation initiatives, like the use of local soil, cement building blocks and simple solar heating devices are being tried. HUZA originates from an American Friends Service Committee project, and remains largely dependent on overseas (Quaker and other Church) financial assistance.

The organisation has many workers at field level but only one executive director at management level.

4.1.3 Planned Parenthood Association of Zambia (PPAZ)

Impala House, P.O. Box 32221, Lusaka
Telephone: 217437

PPAZ is actively involved in encouraging couples to plan and space their children. However, the scale of operations is still very small, concentrating on education rather than contraceptive supply. The association complements the government's primary health care programme with family planning advice. A continuous aim of activity

is to get the government to design and adopt a population policy, which is still lacking. Only 2 per cent of the population, nearly all in urban areas, use some form of modern contraceptive (1983). PPAZ has no service delivery points of its own but distributes contraceptives through the Ministry of Health, Zambia Flying Doctor Service, mission and mine hospitals. The major part of its funds are provided through the International Planned Parenthood Federation. The association is well aware of the importance of conservation activities as a complement to its own work. The Kapiri project, which involved land use activities as well as health care, has been one of the more successful PPAZ projects.

Among their small secretariat there is currently a journalist with a good knowledge of environmental issues.

4.1.4 Professional Hunters Association of Zambia (PHAZ)

Chairman: c/o Associated Printers
P.O. Box 32104, Lusaka
Telephone: 215245

This institution is concerned with promoting the interests of professional hunters in Zambia and monitoring and controlling their practices. It is strongly supportive of conservation efforts in Zambia, but at present is not able to make the direct contribution to wildlife conservation management that it would like to. This largely because there are no full-time professional officers.

4.1.5 Save the Rhino Trust (SRT)

P.O. Box 8169, Woodlands, Lusaka
Telephone: 211044/210736
Telex: 42880ZA

SRT was established in 1980 to operate as an anti-poaching outfit in the Luangwa Valley and other areas which had reasonable numbers of rhino and elephant, but whose survival was threatened due to an escalation in poaching. To man the anti-poaching units, the trust engages officers from the National Parks and Wildlife Service (NPWS) who are seconded to it. Management consists of a few non-government volunteers. The trust is also assisted by honorary wildlife rangers (members of NPWS) in their operations. The main object of the trust is to control the massive poaching of black rhino and elephant. As far as the conservation of these species is concerned, SRT has done fairly well, reclaiming some hundreds of tusks each year. The situation would have been much worse had it not been in operation. The trust is also responsible for raising funds for its own operations.

The trust has sufficient technical staff, but requires more funds and equipment so that it may cover other parts of the country currently not reaches. The NPWS has staff that could be engaged for this exercise.

4.1.6 Wildlife Conservation Society of Zambia (WCSZ)

Off Brentwood Drive, P.O. Box 30255, Lusaka
Telephone: 254226

This is a strong special interest society concerned with wildlife conservation in particular, but also all other aspects of the environment and natural ecosystems in general. Its various branches throughout Zambia organise film shows, talks, fund-raising, run holiday camps in the parks, produce publications (notably, when resources permit, Black Lechwe, its quarterly magazine) and products for sale to the public. Its greatest effectiveness is in spreading public awareness, notably through the 1,200 Chongololo (primary) and Conservation Clubs (secondary), which are run by school teachers in schools with the help of specially-prepared magazines, and teachers' guides, through the Chongololo Club of the Air (radio), through an input in various events and in the media, and by its mobile field education unit. The society is currently completing a resources centre at the Lusaka showground; this will include projection, reprographic, seminar and library facilities.

The society manages to educate around 20 per cent of school children and a smaller number of others with its field unit. In terms of the society's members, however, they are experiencing difficulties in attracting indigenous Zambians.

The small secretariat comprises two Zambians: one a wildlife biologist/educationalist and the other a teacher/materials producer. The society has links with the Save the Rhino Trust and the Ministry of General Education and Culture, and more informal links with the Ministry of Lands and Natural Resources.

4.1.7 Other non-governmental organisations and special interest groups with a concern in conservation and development

- Agricultural and Commercial Society
  P.O. Box 30333, Lusaka
  Telephone: 252314 / 253426

- Chambers of Commerce and Industry

- Entomological Society of Zambia

- Geological Society of Zambia

- Geographical Association of Zambia
  P.O. Box RW 50287, Lusaka

- Renewable Energy Society, c/o University of Zambia

- Zambia Forestry Association (run by Forest Department)
  P.O. Box 70228, Ndola
  Telephone: 2251, Ndola

- Zambia Ornithological Society
  P.O. Box 33944, Lusaka.

4.2 International NGOs

4.2.1 Africare

P.O. Box 33921, Lusaka
Telephone: 21 72 79)

Mainly village and district level projects, concentrating on well construction and water supply, rice production, primary health care and rural skills training.

4.2.2 Christian Children's Fund

Bible House, Freedom Way, P.O. Box 32682, Lusaka
Telephone: 217231

Disbursing well over US$0.5 million each year, this organisation is primarily concerned with providing basic needs for individual children. However, its projects extend to the support of community improvement schemes, such as water supplies, sanitation, primary health care and productive activities.

4.2.3 Oxfam

1 P.O. Box 35624, Lusaka
Telephone: 211319

Oxfam's projects in Zambia are principally based on to assist long term rehabilitation and developm,ent workd, by funding for projects in every main field of development with the predominance of ? agriculture, education and training, village-health sanitation and food aid.

PLEASE NOTE THAT THIS SECTION HAS A LIMITED CIRCULATION

5. INDIVIDUAL EXPERTS

Individual experts were sent biodata questionnaires (Annex 1) and summary sheets for completion. The full biodata forms and curricula vitae of the individual experts are deposited with CDC. Almost ninety biodata summaries of individual experts are appended*. Most of these were submitted as a result of the country analysis. Almost all of the individuals identified so far are based in Zambia, although there is a growing number of experts based outside the country. As mentioned in the Introduction to this report, continual efforts are being made to increase the representation of suitably qualified individuals.

This section contains three parts:

5.1 An index of experts by field of expertise

5.2 A list of the individuals, in alphabetical order, indicating their nationality and fields of expertise

5.3 A list of potential expertise for whom no biodata is currently available.

5.4. The biodata summaries of the previously listed individuals.

These lists represent information in the hands of the compilers at the time of going to press. Continuing efforts are being made to update the information and periodic updates will be sent to recipients of the full report. Individuals who do not respond to communications and who do not update their biodata are being listed as inactive.

Available

1. Zimbabwe (May 1984)
2. Kenya (August 1984, revised Jan. 1986)
3. Zambia (August 1984, revised August 1986)
4. Sri Lanka (September 1985)

Forthcoming

- Bangladesh
- Caribbean
- Central America
- ASEAN
- Pakistan
- Tanzania
- Botswana

Series editor: J.K. Rennie
Senior Technical Officer
Conservation for Development Centre

August 1986
Doc 0257o/0161o bds

Send biodata forms + letter to people ticked below

5.3 POTENTIAL EXPERTISE

List of potential consultants who had not returned biodata forms by reporting date. This list does not necessarily indicate interest in or availability for consultancy work.

02290

	Dr D. Baldry (glossinologist)	
✓	Professor W. B. Banage (biologist)	Biology Department, University of Zambia, Box 32379, Lusaka, Zambia.
	Mr. A. S. Banda, Chief Training & Extension Officer, Forest Dept,	Box 70228, Ndola, Zambia
✓	Mr P.S.M. Berry (anti-poaching)	c/o Save the Rhino Trust, P.O. Box 8169, Woodlands, Lusaka, Zambia.
✓	Mr M. Bingham (range ecologist)	c/o Maluwa Cooperative, Independence Avenue, Lusaka, Zambia.
	Mr W.F. ~~Bruce-Miller~~ (game farming)	P.O. Box 25, Choma, Zambia.
✓	Dr F.M.Bushrod (entomologist)	NCSR, P.O. Box CH158, Chelston, Lusaka, Zambia.
	Mr A. ~~Carr~~ (crocodile farmer, fishing)	c/o P.O. Box 569, Kasama, Zambia
✓	Mr N.J. ~~Carr~~ (tourism specialist)	c/o P.O. Box 100. Mfuwe, Zambia.
✓	Major A. Chanda (herpetologist)	Munda Wanga Gardens, NHDC, P.O. Box 33200, Lusaka, Zambia.
	Mr S. Chisumpa (forestry)	Forest Department, P.O. Box 702~~8~~28, Ndola.
	Professor E. Colson (anthropologist)	(c/o University of California at Berkeley.)
	Mr P. Conant (wildlife biologist)	
✓	~~Mr~~ Mrs S. Crafter (crocodile farming)	School of Agricultural Sciences, University of Zambia, P.O. Box 32379, Lusaka.
✓	B. Dalal-Clayton (soil surveyor)	c/o Norwegian Agency for International Development, P.O. Box 34750, Lusaka, Zambia.
✓	Mr. J. Charman, Industry Pollution Advisor, MITS,	ZCCM PO Box 260071 Kalulushi, Zambia

	P. Daly (agricultural economist)	School of Agriculture, University of North Wales, Bangor.
✓	Mrs Joan Davidson (town and country planning)	69 Painswick Road, Cheltenham, England.
✓	Mr John Davidson (environmental planner)	69 Painswick Rd, Cheltenham, England.
✓	Dr I. Douglas-Hamilton (wildlife biologist)	African Elephant Action Centre P.O. Box 54667, Nairobi, Kenya.
✓	Mr. C. Evison Asst. Director (Tsetse),	Veterinary & Tsetse Control Services, PO Box 50197 Lusaka
✓	Mr M. J. Faddy (anti-poaching)	Save the Rhino Trust, P.O. Box 8169, Woodlands, Lusaka, Zambia.
	Mr F. Flynn (fish farming)	c/o TAP. P.O. Box 31522, Lusaka, Zambia.
✓	Prof ~~Dr~~ W. Handlos (botanist/ecologist)	Department of Biology, University of Zambia, P.O. Box 32379, Lusaka.
X ✓	Professor J. Hanks (wildlife biologist)	Institute of Natural Resources, University of Natal, P.O. Box 375, Pietermaritzburg, Natal, South Africa.
✓	~~Major J. Harvey~~ ~~(anti-poaching)~~	P.O. Box 24, Chisamba.
	Dr P. Hayward (sociology: fisheries/informal sector)	(c/o Institute of African Studies, P.O. Box 30900, Lusaka)
✓	Dr D. Huckabay (geographer: forests)	Department of Geography, University of Zambia, P.O. Box 32379, Lusaka.
✓	Dr N. Katanekwa (archaeologist)	National Monuments Commission, P.O. Box 60124, Livingstone.
✓	~~Mr G. B. Kaweche~~ ~~(wildlife research)~~	National Parks and Wildlife Service, P/Bag 1, Chilanga.
	Mr P. Konrad (ornithologist)	c/o International Crane Foundation.
✓	Mr N ~~A~~. Leader-Williams (wildlife biologist)	P.O. Box 90, Mfuwe, Zambia.
	Mr I. Manning (wildlife)	

✓ Mr J. D. Mazala (family planning)	Planned Parenthood Association of Zambia, P.O. Box 32221, Lusaka, Zambia.
~~Mr P.T.S. Miller~~	President, Wildlife Conservation Society of Zambia, P.O. Box 30255, Lusaka, Zambia.
✓ Mr A. Mulongo (ecological historian)	National Political Museum, Kulima Tower, Lusaka, Zambia.
✓ Dr M.S. Muntemba (rural development)	1261 Le Vaud, Switzerland.
Mr P. Nkunika (entomologist)	Livingstone Museum, P.O. Box 60498, Livingstone, Zambia.
✓ Dr P. Obrdlik (environmental research)	National Council for Scientific Research, P.O. Box CH158, Chelston, Lusaka, Zambia.
Mr T. Osborne (wildlife biologist) Dr. B.K. Patel	Chief Agriculture Research Officer Mount Makulu Research Station P. Bag 7, Chilanga, Zambia
✓ Mr A. J. Pope (environmentalist)	P.O. Box 31943, Lusaka, Zambia.
✓ Dr W. A. Rees (ecologist)	Ministry of Agriculture, Fisheries and Food Agricultural Science Service, Worplesdon Laboratory, Tangley Place, Worplesdon, Guildford, Surrey, UK.
Dr D. Rottcher (veterinarian: wildlife diseases)	
✓ Professor T. Scudder (environmental impacts: society)	California Institute of Technology, Pasadena, California.
Mr S. Siachoono (herpetologist)	Livingstone Museum, P.O. Box 60498, Livingstone, Zambia.
✓ Professor M. Siamwiza (biochemist)	Deputy Director, National Council for Scientific Research, P.O. Box CH158, Chelston, Lusaka, Zambia.
Dr S. M. Silangwa	Director. National Council for Scientific Research, P.O. Box CH158, Chelston, Lusaka, Zambia.
Dr A Siwela	Dean of Natural Sciences, University of Zambia, P.O. Box 32379, Lusaka.

Mr M.P. Simbotwe (herpetologist)	Livingstone Museum, P.O. Box 60498, Livingstone, Zambia.
✓ R. Stjernstedt (glossinologist/ornithologist)	c/o Mrs D. Muntemba, National Commission for Development Planning, P.O. Box RW 50268, Lusaka.
Mr I.C. Tanner (ornithologist)	
✓ Dr B. Turner (physical geography)	Kafue Basin Research Project, University of Zambia, P.O. Box 31338, Lusaka; Zambia.
✓ Prof ~~Dr~~ G. J. Williams (geographer, environmental impacts)	Department of Geography, University of Zambia, P.O. Box 31338, Lusaka, Zambia.
✓ Dr A.P. Wood (population geographer)	Rural Development Studies Bureau, University of Zambia, P.O. Box 30900, Lusaka, Zambia. New address JKR. – in UK.
Mr E. J. Zimba (research and development planning)	National Council for Scientific Research, P.O. Box CH 158, Chelston, Lusaka, Zambia.
Dr J.N. Zulu	Head, Biology Department, University of Zambia, P.O. Box 31338, Lusaka, Zambia.

SUMMARY PAGE EXAMPLE

1.	NAME:	Mr. J. Phiri
2.	DATE OF BIRTH:	1.1.50
3.	NATIONALITY:	Zambian

4. TECHNICAL SPECIALITIES:

B Assessment Techniques

- baseline surveys/field methods
- modelling/simulation
- monitoring programmes
- remote sensing

J Ecology/Biology

- mammals
- reptiles & amphibians
- energy budgets/pathways/foodwebs
- physiological ecology

M Wildlife Conservation

- animal damage control
- introductions/exotics
- utilisation/harvest/trade
- wildlife/wildlands management

5. RECENT PROFESSIONAL HISTORY:

1984 - present	Consultant to Ministry of Agriculture, Zambia.
1978 - 1983	Senior Animal Scientist, Bongabonga research Station.
1974 - 1980	Research Scientist, UNZA, Department of Agriculture.
1970 - 1977	Head of Research and Management Section of African Wildlife Foundation, Lusaka.

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Available for short-term consultancies and work in an advisory capacity as well as voluntary work with expenses paid.

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