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INTERNATIONAL ATOMIC ENERGY AGENCY

IAEA-CPS-92/13
16 September 1992
Original: ENGLISH

COUNTRY PROGRAMME SUMMARY

THE AGENCY'S TECHNICAL CO-OPERATION

PROGRAMME WITH

ZAMBIA

1982 - 1992

COUNTRY PROGRAMME SUMMARIES

DEPARTMENT OF TECHNICAL CO-OPERATION



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COUNTRY PROGRAMME SUMMARIES

EVALUATION SECTION

DEPARTMENT OF TECHNICAL CO-OPERATION

THE AGENCY'S TECHNICAL CO-OPERATION

PROGRAMME WITH

ZAMBIA

1982 - 1992

COUNTRY PROGRAMME SUMMARIES

This report contains a review of the Agency's technical co-operation activities in Zambia carried out during 1982 - 1992. In terms of coverage and analytical depth, country programme summaries stand somewhere midway between in-depth country programme evaluations and individual project evaluations. They attempt to provide a comprehensive, descriptive picture of the Agency's co-operation with a Member State in a manner that will be particularly useful for programming decisions. The attempt is very much to describe -- largely through statistical data -- not to provide independent analysis and evaluation.

ZAMBIA

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INTRODUCTION

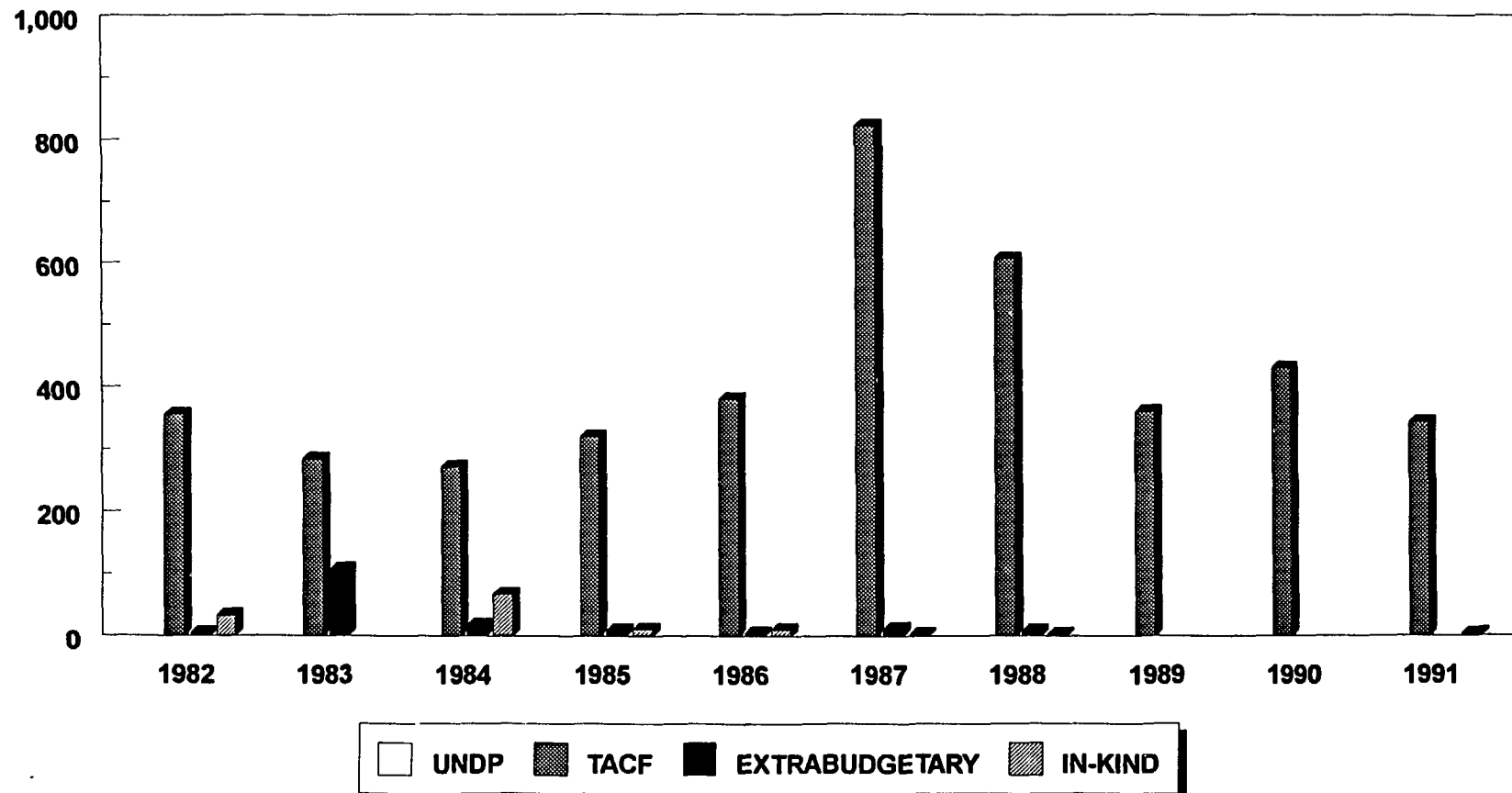
The country programme summary reported on here is one in the series of such studies being undertaken of the Agency's TC programme with Member States. With \$5.5 million of Agency support received, Zambia ranks 33rd among all recipients of technical assistance in the period 1958 through 1991.

More than half of the assistance during the past ten years has been provided in the form of equipment (61%), followed by expert services (25%) and training (14%). Almost all of the resources made available came from the Technical Assistance and Co-operation Fund (93%), with only very small shares provided through extrabudgetary contributions (4%) and assistance in kind (3%).

With regard to project disbursements during the past ten years, by sector, the largest areas have been agriculture (33%) and general atomic energy development (23%), followed by industry and hydrology (19%), nuclear raw materials (13%) and nuclear safety (6%).

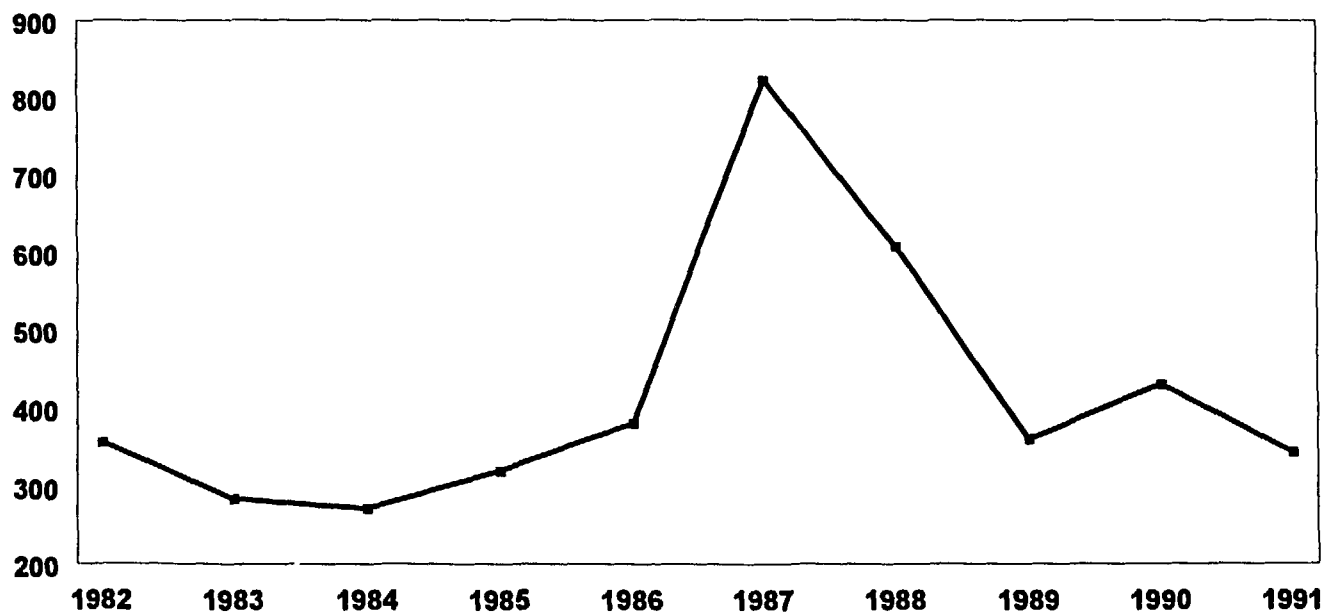
**ASSISTANCE PROVIDED BY THE AGENCY TO
ZAMBIA, BY SOURCE, 1982 - 1991**

THOUSANDS OF DOLLARS



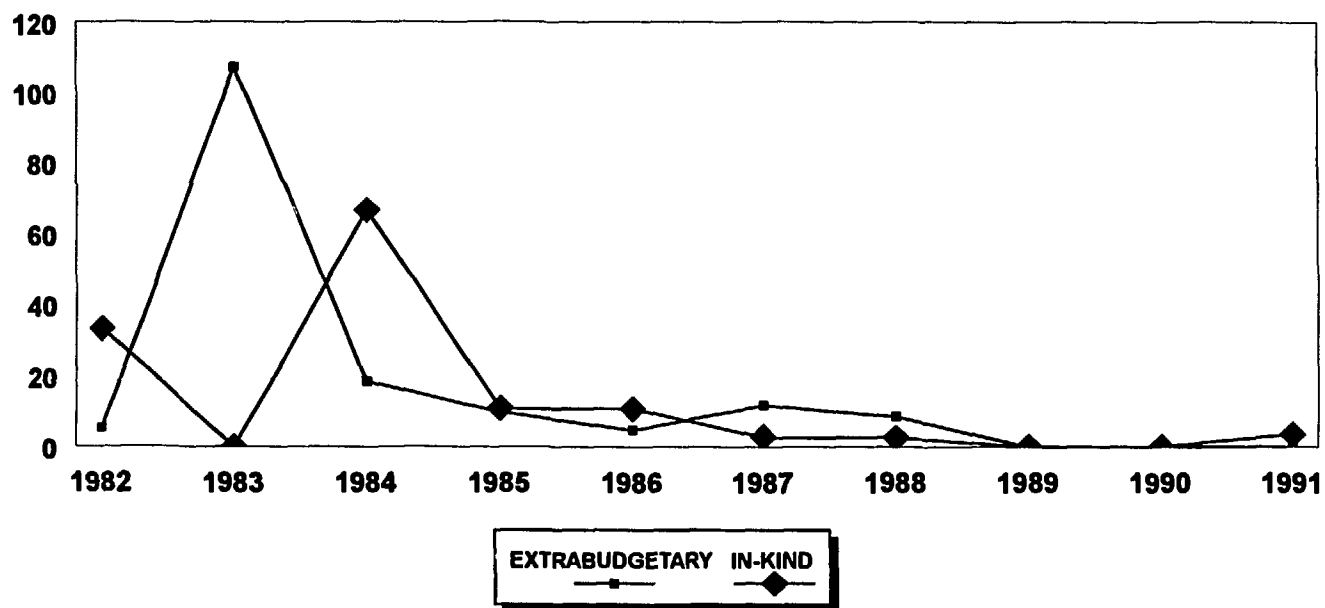
TACF ASSISTANCE PROVIDED TO ZAMBIA
1982 - 1991

THOUSANDS OF DOLLARS

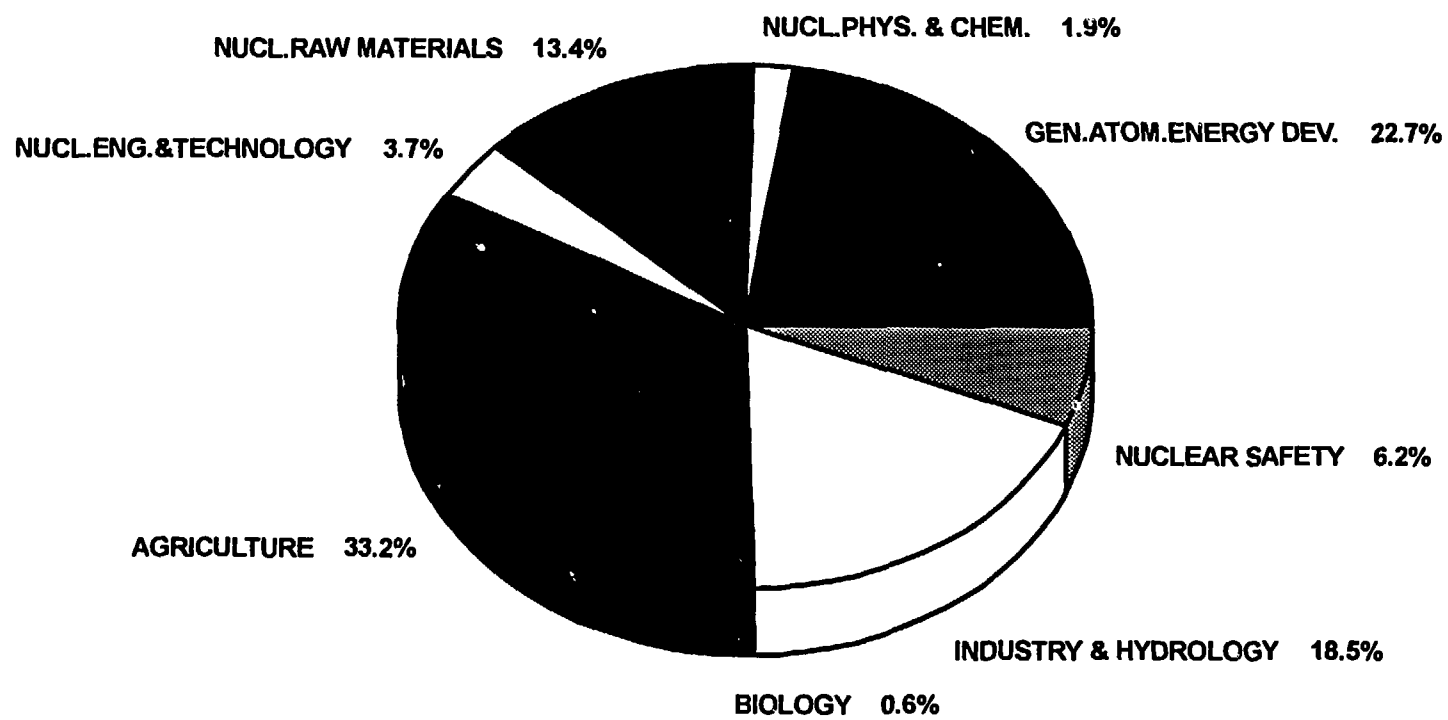


**EXTRABUDGETARY AND IN-KIND ASSISTANCE
PROVIDED TO ZAMBIA, 1982 - 1991**

THOUSANDS OF DOLLARS

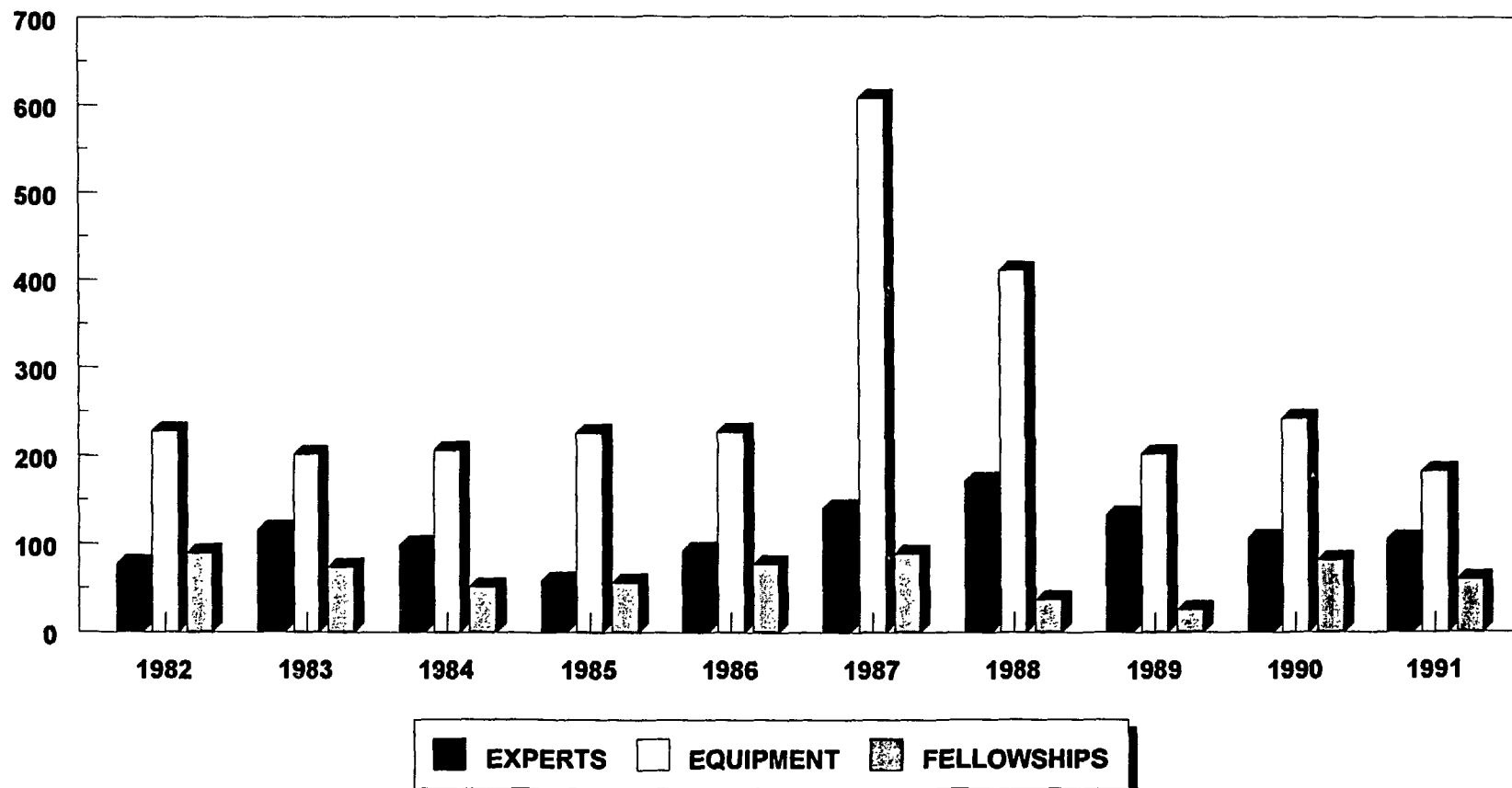


**TC PROJECT DISBURSEMENTS IN ZAMBIA,
BY SECTOR, 1982 - 1992**

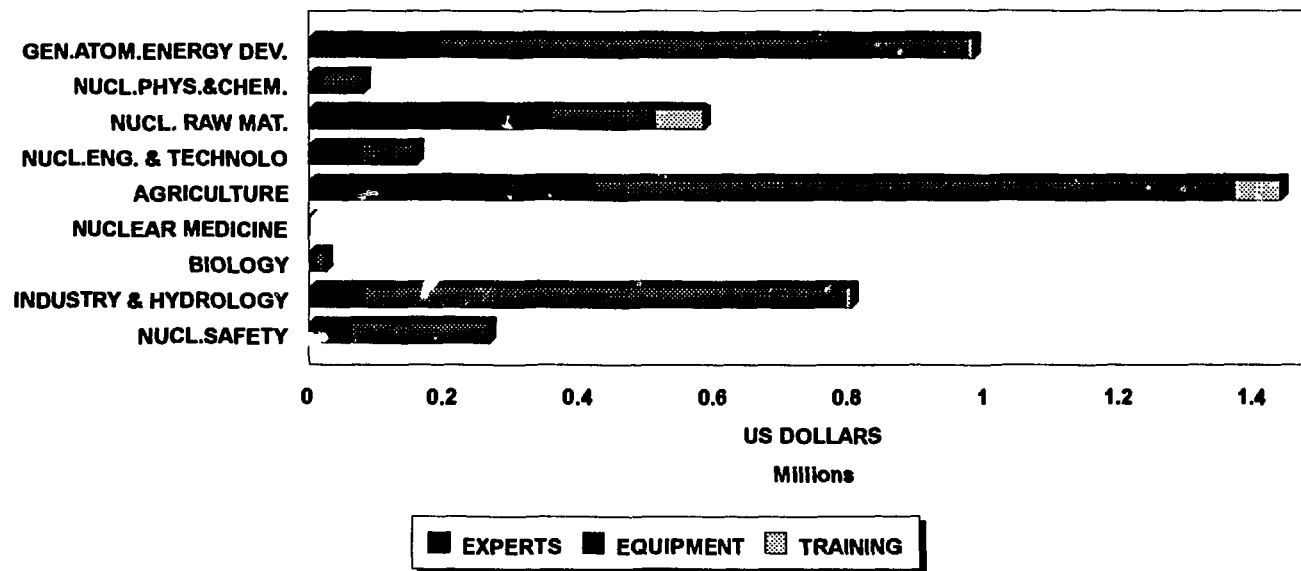


**ASSISTANCE PROVIDED BY THE AGENCY TO
ZAMBIA, BY TYPE, 1982 - 1991**

THOUSANDS OF DOLLARS



**EXPERT SERVICES, EQUIPMENT, AND PROJECT-
FUNDED TRAINING PROVIDED TO ZAMBIA,
BY SECTOR, 1982 - 1992**



THE AGENCY'S TECHNICAL CO-OPERATION PROGRAMME WITH ZAMBIA

ALL SOURCES

ZAMBIA'S RANKING AS A TC RECIPIENT
1958 - 1991
(in \$1000)

YEAR	RANKING	AMOUNT
1958-81	37 th	1038.4
1982	19 th	393.3
1983	19 th	390.4
1984	23 rd	355.9
1985	26 th	339.6
1986	32 nd	394.9
1987	15 th	834.9
1988	13 th	617.4
1989	29 th	359.5
1990	31 st	429.6
1991	38 th	346.3
1958-91	33 rd	5500.2

**"TOP FIVE" RECIPIENTS OF AGENCY ASSISTANCE
1958 - 1991 (in \$1000)**

ALL SOURCES

Year	I	II	III	IV	V	ZAMBIA
1958-81	BRA 7907.9	IND 6670.7	ARG 5200.4	PAK 5091.2	CHI 5005.7	37 th - 1038.4
1982	EGY 807.5	PER 746.4	CUB 715.7	COL 667.7	THA 654.3	19 th - 393.3
1983	EGY 2077.9	PER 1116.8	VIE 948.1	PHI 778.6	IRA 722.1	19 th - 390.4
1984	EGY 3625.9	PER 1750.4	THA 1094.6	CUB 1028.7	PHI 881.2	23 rd - 355.9
1985	EGY 2494.8	PER 1120.7	THA 1117.4	BGD 1068.2	PHI 963.7	26 th - 339.6
1986	EGY 2317.0	BRA 1452.9	THA 1169.4	POL 1050.3	BGD 896.4	32 nd - 394.9
1987	HUN 3452.6	EGY 1775.4	THA 1742.4	INS 1312.5	YUG 1223.2	15 th - 834.9
1988	EGY 1486.9	BUL 1361.6	CPR 1278.5	THA 1158.7	BRA 1096.7	13 th - 617.4
1989	CPR 1542.3	EGY 1505.1	THA 1205.3	BRA 1096.5	INS 999.1	29 th - 359.5
1990	POL 2308.1	CPR 2005.0	VIE 1589.2	INS 1412.6	BRA 1229.1	31 st - 429.6
1991	INS 1305.2	CPR 975.0	EGY 959.8	BRA 951.2	BUL 934.7	38 th - 346.3
1958-91	EGY 22222.3	BRA 17021.1	THA 14596.1	PER 12631.1	INS 12383.8	33 rd - 5500.2

"TOP FIVE" RECIPIENTS OF AGENCY ASSISTANCE
1958 - 1991 (in \$1000)

TECHNICAL ASSISTANCE AND CO-OPERATION FUND

Year	I	II	III	IV	V	ZAMBIA
1958-81	HUN 2533.0	PAK 2010.9	EGY 1898.7	THA 1712.8	BRA 1704.8	33 rd - 724.6
1982	EGY 507.1	HUN 438.2	CUB 430.7	ECU 398.4	ZAM 354.9	5 th - 354.9
1983	EGY 1049.4	VIE 897.4	POL 667.8	PAK 498.5	PHI 430.0	14 th - 283.3
1984	EGY 1197.2	CUB 655.6	ECU 565.6	BGD 506.3	BUL 472.4	22 nd - 270.9
1985	BGD 991.8	VIE 745.0	THA 708.7	BRA 571.8	POR 538.7	20 th - 319.0
1986	BRA 1381.8	THA 871.9	POL 833.5	BGD 823.9	SYR 751.8	26 th - 379.6
1987	HUN 3305.2	DRK 986.8	BUL 888.5	INS 885.8	EGY 878.9	8 th - 820.5
1988	BUL 1195.6	PER 856.5	EGY 768.6	INS 751.7	MAL 656.0	9 th - 606.4
1989	EGY 990.9	CPR 868.2	POR 769.6	CHI 756.9	MAL 619.4	25 th - 359.5
1990	POL 1562.3	VIE 1518.8	DRK 1156.2	IRA 958.0	YUG 933.4	25 th - 429.6
1991	BUL 893.1	PAK 868.8	INS 855.1	VIE 817.6	CPR 814.5	35 th - 342.8
1958-91	EGY 9591.3	HUN 8256.5	POL 7793.5	BRA 7433.5	PAK 7346.0	21 st - 4891.1

ASSISTANCE PROVIDED BY THE AGENCY TO ZAMBIA

Financial Summary 1982 - 1991
(In thousands of dollars)

Year	ASSISTANCE PROVIDED, BY TYPE						ASSISTANCE PROVIDED, BY SOURCE					
	Experts	Equipment	Fellowships	Group training	Sub-contracts	Total	UNDP	TACF CC	TACF NCC	Extra-budgetary	In-kind	Total
1982	76.8	227.4	89.1	-	-	393.3	-	324.3	30.6	5.3	33.1	393.3
1983	116.0	201.1	73.3	-	-	390.4	-	264.3	19.0	107.1	-	390.4
1984	98.7	205.9	51.3	-	-	355.9	-	269.8	1.1	18.4	66.6	355.9
1985	58.0	225.4	56.2	-	-	339.6	-	262.4	56.6	9.8	10.8	339.6
1986	92.0	226.1	76.8	-	-	394.9	-	379.6	-	4.7	10.6	394.9
1987	140.1	606.4	88.4	-	-	834.9	-	783.9	36.6	11.6	2.8	834.9
1988	170.5	410.1	36.8	-	-	617.4	-	593.7	12.7	8.5	2.5	617.4
1989	132.2	201.7	25.6	-	-	359.5	-	327.1	32.4	-	-	359.5
1990	105.9	241.9	81.8	-	-	429.6	-	401.1	28.5	-	-	429.6
1991	104.7	182.1	59.5	-	-	346.3	-	322.3	20.5	-	3.5	346.3
1982-91	1 094.9	2 728.1	638.8	-	-	4 461.8	-	3 928.5	238.0	165.4	129.9	4 461.8

TECHNICAL CO-OPERATION PROJECTS IN ZAMBIA
BY SECTOR

PROJECTS COMPLETED AND OPERATIONAL 1982 - 1992

TOTAL PROJECT ALLOTMENTS AND DISBURSEMENTS
(as of 31 August 1992)

SECTOR	NO. OF PROJECTS	ALLOTMENTS \$	% OF TOTAL	DISBURSEMENTS \$	% OF TOTAL
General atomic energy development	2	967 984	21.4	987 217	22.7
Nuclear physics and chemistry	1	79 505	1.8	81 407	1.9
Nuclear raw materials	3	553 987	12.3	584 618	13.4
Nuclear engineering and technology	2	170 790	3.8	159 740	3.7
Nuclear techniques in agriculture	10	1 537 292	34.0	1 443 279	33.1
Nuclear medicine	1	6 900	0.1	2 233	-
Nuclear techniques in biology	1	105 194	2.3	24 786	0.5
Nuclear techniques in industry and hydrology	2	781 815	17.3	804 292	18.5
Nuclear safety	2	314 210	7.0	268 421	6.2
TOTAL	24	4 517 677	100.0	4 355 993	100.0

TECHNICAL CO-OPERATION PROJECTS IN ZAMBIA
COMPLETED AND OPERATIONAL, BY SECTOR, 1982 - 1992
(As of 31 August 1992)

Sector	No. of projects	Total project allotments \$	Total project disbursements \$
<u>Completed projects</u>			
General atomic energy development	1	103 600	114 704
Nuclear physics and chemistry	-	-	-
Nuclear raw materials	2	242 633	251 025
Nuclear engineering and technology	2	170 790	159 740
Nuclear techniques in agriculture	5	470 346	496 133
Nuclear medicine	1	6 900	2 233
Nuclear techniques in biology	-	-	-
Nuclear techniques in industry & hydrology	1	35 240	37 200
Nuclear safety	-	-	-
TOTAL	12	1 029 509	1 061 035
<u>Operational projects</u>			
General atomic energy development	1	864 384	872 513
Nuclear physics and chemistry	1	79 505	81 407
Nuclear raw materials	1	311 354	333 593
Nuclear engineering and technology	-	-	-
Nuclear techniques in agriculture	5	1 066 946	947 146
Nuclear medicine	-	-	-
Nuclear techniques in biology	1	105 194	24 786
Nuclear techniques in industry & hydrology	1	746 575	767 092
Nuclear safety	2	314 210	268 421
TOTAL	12	3 488 168	3 294 958

EXPERT SERVICES, EQUIPMENT AND PROJECT-FUNDED TRAINING PROVIDED TO ZAMBIA, BY SECTOR
 PROJECTS COMPLETED AND OPERATIONAL 1982 - 1992
 (As of 31 August 1992)

FIELD	TOTAL PROJECT ALLOTMENTS				TOTAL PROJECT DISBURSEMENTS			
	EXPERT SERVICES		EQUIPMENT	TRAINING	EXPERT SERVICES		EQUIPMENT	TRAINING
	M/M	\$	\$	\$	M/M	\$	\$	\$
General atomic energy development	27/15	157 290	780 444	30 250	26/18	197 722	780 847	8 648
Nuclear physics and chemistry	2/10	19 600	58 855	1 050	2/10	23 072	58 335	-
Nuclear raw materials	51/21	294 958	163 560	95 469	50/25	359 648	154 188	70 782
Nuclear engineering and technology	12/24	88 290	82 500	-	12/25	80 032	79 708	-
Nuclear techniques in agriculture	63/17	407 579	1 039 459	90 254	53/25	425 583	948 266	69 430
Nuclear medicine	1/00	6 900	-	-	0/07	2 233	-	-
Nuclear techniques in biology	5/00	48 900	40 500	15 794	0/27	12 257	12 529	-
Nuclear techniques in industry & hydrology	8/08	59 065	714 900	7 850	8/07	86 106	709 896	8 290
Nuclear safety	13/17	60 290	241 710	12 210	6/11	64 296	200 915	3 210
TOTAL	185/22	1 142 872	3 121 928	252 877	162/05	1 250 949	2 944 684	160 360

AGENCY FELLOWS FROM ZAMBIA

1982 - 1992¹
(As of 31 August 1992)

Sector	No. of fellowships	No. of months/days	Host countries
General atomic energy development	3	21/29	UK, IAEA
Nuclear physics	5	13/24	KEN, HUN, GER
Nuclear chemistry	2	8/28	YUG, IAEA
Nuclear raw materials	5	25/09	YUG, IND, CAN, UK
Nuclear engineering and technology	4	19/25	USA, KEN, HUN, UK
Nuclear techniques in agriculture	33	170/19	USA, CAN, NIR, BKF, NET, HUN, ITA, KEN, ZIM, DEN, UK, IAEA
Nuclear medicine	6	55/04	FRA, AUS, USA, POL, UK
Nuclear techniques in biology	-	-	-
Nuclear techniques in industry and hydrology	3	10/16	CAN, HUN, IAEA
Nuclear safety	2	3/06	IAEA
TOTAL	63	329/10	

¹/ Only includes fellows who have completed or at least started training.

ZAMBIA
FELLOWSHIPS LONGER THAN 12 M/M
1982 - 1992
(As of 31 August 1992)

Name	Field of study	Host country	Date	Duration	Project
BANDA, J.	Science laboratory technology	UK	Sep.82 - Dec.83	15/06	ZAM/4/002
MUMBA	Analytical nuclear physics	HUN	Sep.80 - Jun.83	30/14	-
NKONDE	Analytical chemistry	UK	Sep.81 - Sep.82	12/00	-
SIKATALI	Uranium exploration	UK	Started: Sep.91	12/00	ZAM/3/005
NAMUKOLO	Nuclear electronics	USA	Sep.81 - Jun.83	21/15	ZAM/4/002
CHANGA	Radioimmunoassay technology	CAN	May 83 - May 84	12/01	-
KHONDWE	Animal parasitology	USA	Aug.83 - Aug.85	24/02	ZAM/5/010
MIZINGA	Radioimmunoassay in animal reproduction	USA	Sep.81 - Aug.83	23/19	ZAM/5/010
MUNYINDA	Soil fertility	CAN	May 85 - Dec.86	19/02	ZAM/5/004
NHAMBURO	Isotopes in soil/plant relationships	USA	Oct.81 - Oct.82	12/01	-
KABINGA	Medical physics	USA	Aug.86 - Aug.87	12/02	-
KUMWENDA	Radiotherapy	POL	Feb.90 - Feb.91	12/00	RAF/0/003
MWALE	Radiotherapy	UK	Feb.87 - Mar.88	12/11	-

ZAMBIAN NATIONALS WHO WERE AWARDED MORE THAN ONE
 FELLOWSHIP OR SCIENTIFIC VISIT
 1982 - 1992
 (As of 31 August 1992)

Name	Field of study	Host country	Date	Duration	Project
CHIPEPA	1. Animal reproduction 2. Radioimmunoassay	UK CAN	Apr.83 - Jun.83 Jul.85 - Aug.85	1/29 1/14	ZAM/5/010 ZAM/5/010
MOOBOLA	1. Radiation entomology 2. Radiation entomology	IAEA NIR BKF	May 82 - Aug.82 Oct.83 - Nov.83	3/01 0/15	ZAM/5/007 ZAM/5/009
MUMBA	1. Analytical nuclear physics 2. Analytical nuclear physics	HUN HUN	Sep.80 - Jun.83 Mar.88 - Apr.88	30/14 1/11	ZAM/0/005 ZAM/0/005
SIKATALI	1. Uranium exploration 2. Uranium exploration	CAN UK	Sep.87 - Dec.87 Started: Sep.91	3/06 12/00	ZAM/3/005 ZAM/3/005
SIMBEYA	1. Radiation protection 2. Safety standards, regulations and procedures	IAEA IAEA	Sep.86 - Nov.86 Mar.88	2/14 0/22	ZAM/9/004 ZAM/9/004

AGENCY TRAINING COURSES WITH ZAMBIAN PARTICIPATION

1982 - 1992
(As of 31 August 1992)

Field	Number of participants	Number of courses
General atomic energy development	3	3
Nuclear physics	7	7
Nuclear chemistry	2	2
Nuclear raw materials	1	1
Nuclear engineering and technology	6	5
Nuclear techniques in agriculture	20	18
Nuclear medicine	7	5
Nuclear techniques in biology	-	-
Nuclear techniques in industry & hydrology	2	2
Nuclear safety	15	14
TOTAL	63	57

MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY ZAMBIAN NATIONALS
1982 - 1992
(As of 31 August 1992)

Name	Course No.	Course title	Year	Location
CHISHIMBA, G.M.	INT/4/097 (001)	ITC on radiation technology and engineering	1988	HUN
	INT/9/038 (001)	ITC on the transport of radioactive materials	1982	UK
	INT/9/045 (001)	ITC for radiation protection officers in regulatory bodies	1984	GDR
	INT/9/068 (001)	ITC on management and disposal of radioactive wastes	1986	CAN
	INT/9/083 (001)	ITC on planning, preparedness and response to nuclear accidents or radiological emergencies	1987	USA
HAYUMBU	INT/1/026 (001)	ITC on radiochemistry and nuclear analytical techniques	1984	FRA GFR
	INT/1/046 (001)	ITC on nuclear measurements and methods in reactor and personal neutron dosimetry	1989	USSR
KABINGA	RAF/6/005 (001)	RTC on dosimetry in radiotherapy, including treatment planning	1991	EGY
	RAF/9/004 (001)	RTC on radiation protection	1988	EGY
	RAF/9/005 (004)	RWS on basic radiation and development of national infrastructure for radiation safety	1990	NIR
	RAF/9/005 (005)	RWS on trouble shooting and maintenance of Harshaw TLD equipment	1991	AUS
	RAF/9/005 (007)	RWS on emergency planning, preparedness and international co-operation	1991	AUS
KALEBWE	INT/1/025 (001)	ITC on the research and application of energy dispersive X-ray fluorescence analysis	1984	SIN
	INT/1/038 (001)	ITC on neutron physics and nuclear data measurements in research reactors	1987	USSR
MULEYA	INT/9/079 (001)	ITC on management of radioactive waste	1987	GFR
	RAF/9/005 (004)	RWS on basic radiation and development of national infrastructure for radiation safety	1990	NIR
NAMUKOLO	INT/4/098 (001)	Advanced ITC on nuclear electronics	1989	USA
	RAF/4/004 (001)	RTC on protection of nuclear instruments	1991	EGY

MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
 BY ZAMBIAN NATIONALS
 1982 - 1992
 (As of 31 August 1992)

Name	Course No.	Course title	Year	Location
NOMAI	INT/1/041 (001)	ITC on advanced nuclear analytical techniques	1986	AUS
	INT/1/044 (001)	ITC pm applied nuclear physics and data measurements at neutron generators	1983	GDR
NONDO	INT/5/105 (001)	ITC on the use of isotopes and radiation in integrated pest management with special reference to the sterile insect technique	1986	USA
	RAF/5/009 (001)	RTC on integrated control of tsetse with emphasis on the sterile insect technique	1988	NIR

PROJECTS COMPLETED IN ZAMBIA SINCE 1982
(As of 31 August 1992)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1980	ZAM/0/004	Nuclear physics	13/00	60 600	43 000	-	13/01	71 373	43 331	-	1983
1978	ZAM/3/003	Nuclear raw materials	33/20	154 133	55 500	18 000	33/26	185 796	52 938	-	1985
1983	ZAM/3/004	Training in uranium exploration	-	-	15 000	-	-	-	12 291	-	1983
1982	ZAM/4/002	Nuclear equipment maintenance	7/00	45 000	30 500	-	7/03	38 169	28 116	-	1987
1987	ZAM/4/004	Nuclear equipment maintenance	5/24	43 290	52 000	-	5/22	41 863	51 592	-	1991
1980	ZAM/5/005	Isotopes in agriculture	6/00	28 800	27 500	-	6/02	36 448	27 244	-	1984
1982	ZAM/5/010	Radioisotopes in animal science	5/26	39 350	131 400	32 854	5/26	52 427	132 588	34 400	1991
1984	ZAM/5/012	Isotopes in agriculture (soil moisture studies)	3/22	25 590	107 452	-	3/22	45 122	108 278	-	1991
1984	ZAM/5/013	Induced mutation breeding	0/15	3 300	-	-	0/11	2 288	-	-	1984

PROJECTS COMPLETED IN ZAMBIA SINCE 1982
(As of 31 August 1992)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1987	ZAM/5/016	Food preservation to reduce post-harvest losses	2/00	14 100	60 000	-	1/26	15 305	42 033	-	1989
1985	ZAM/6/004	Nuclear medicine	1/00	6 900	-	-	0/07	2 233	-	-	1985
1986	ZAM/8/005	Groundwater studies	1/00	7 060	28 180	-	0/29	8 849	28 351	-	1990
	TOTAL	12 projects	79/17	428 123	550 532	50 854	78/25	499 873	526 762	34 400	

OPERATIONAL PROJECTS IN ZAMBIA
(As of 31 August 1992)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS			
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING
			M/M	\$	\$	\$	M/M	\$	\$	\$
1981	ZAM/0/005	Nuclear analytical laboratory	14/15	96 690	737 444	30 250	13/17	126 349	737 516	8 648
1989	ZAM/1/006	Nuclear sciences and techniques	2/10	19 600	58 855	1 050	2/10	23 072	58 335	-
1986	ZAM/3/005	Uranium resources	18/01	140 825	93 060	77 469	16/29	173 852	88 959	70 782
1979	ZAM/5/004	Radioisotopes in agriculture (fertilizer studies)	19/06	96 670	143 349	-	19/12	117 924	135 236	-
1982	ZAM/5/009	Tsetse fly control	8/18	51 609	223 717	-	6/20	44 210	220 895	-
1985	ZAM/5/014	Induced mutation breeding	7/00	53 100	135 000	3 000	4/16	54 046	133 116	-
1986	ZAM/5/015	Tick resistance to ¹ acaricides	5/20	44 210	156 041	34 600	4/26	57 813	126 727	27 576
1991	ZAM/5/018	Diagnosis of animal diseases	5/00	50 850	55 000	19 800	0/14	-	22 149	7 454
1991	ZAM/7/002	Gamma sterilized biological tissue grafts	5/00	48 900	40 500	15 794	0/27	12 257	12 529	-

^{1/} Allotments for equipment include \$6000 for sub-contracts (no disbursements yet).

OPERATIONAL PROJECTS IN ZAMBIA
(As of 31 August 1992)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS			
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING
			M/M	\$	\$	\$	M/M	\$	\$	\$
1983	ZAM/8/003	Multi-purpose gamma irradiation facility	7/08	52 005	686 720	7 850	7/08	77 257	681 545	8 290
1982	ZAM/9/004	Radiation protection services ^{2/}	10/19	33 430	182 710	3 210	5/26	55 183	180 469	3 210
1991	ZAM/9/005	Radiation protection services (phase II)	2/28	26 860	59 000	9 000	0/15	9 113	20 446	-
	TOTAL	12 projects	106/05	714 749	2 571 396	202 023	83/10	751 076	2 417 922	125 960

^{2/} Includes: Cost-free expert services offered (6 months) and actually provided (1.2 months); equipment valued at \$53,000 offered and provided in kind.

COUNTERPART INSTITUTIONS IN ZAMBIA (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>GENERAL ATOMIC ENERGY DEVELOPMENT</u>		
ZAM/0/004	University of Zambia, Faculty of Science, Department of Physics, Lusaka	EGAN
ZAM/0/005	National Council for Scientific Research, Radioisotopes Research Unit, Lusaka	ZAMAN NOMAI
<u>NUCLEAR PHYSICS AND CHEMISTRY</u>		
ZAM/1/006	University of Zambia, Faculty of Science, Department of Physics, Lusaka	CHIRWA
<u>NUCLEAR RAW MATERIALS</u>		
ZAM/3/003	Geological Survey of Zambia, Lusaka	MONEY
ZAM/3/004	University of Zambia, Department of Mining, Lusaka	MDALA
ZAM/3/005	Prescribed Minerals and Materials Commission, Lusaka	MONEY
<u>NUCLEAR ENGINEERING AND TECHNOLOGY</u>		
ZAM/4/002	National Council for Scientific Research, Technical Services Unit, Lusaka	PHIRI
ZAM/4/004	National Council for Scientific Research, Technical Services Unit, Lusaka	CHISHIMBA

COUNTERPART INSTITUTIONS IN ZAMBIA (I)

(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>AGRICULTURE</u>		
ZAM/5/004	1. Mount Makulu Central Research Station, Soils Section Chilanga	MUNYINDA
	2. University of Zambia, School of Agriculture, Lusaka	LUNGU
ZAM/5/005	1. Department of Agriculture, Central Agricultural Research Station, Lusaka	MUNYINDA
	2. University of Zambia, School of Agriculture, Lusaka	
ZAM/5/009	National Council for Scientific Research, Livestock and Pest Research Centre, Chilanga	SIMWANZA
ZAM/5/010	National Council for Scientific Research, Livestock and Pest Research Centre, Chilanga	CHIPEPA
ZAM/5/012	1. Mount Makulu Central Research Centre, Soils Section, Chilanga	MUNYINDA
	2. University of Zambia, School of Agriculture, Lusaka	LUNGU
ZAM/5/013	National Council for Scientific Research, Tree Improvement Research Centre, Kitwe	CHISHIMBA
ZAM/5/014	National Council for Scientific Research, Tree Improvement Research Centre, Kitwe	CHISHIMBA
ZAM/5/015	National Council for Scientific Research, Livestock and Pest Research Centre, Chilanga	KAPOSHI MUNDIA
ZAM/5/016	National Council for Scientific Research, Food Technology Research Unit, Lusaka	CHISHYA

COUNTERPART INSTITUTIONS IN ZAMBIA (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>AGRICULTURE (cont'd)</u>		
ZAM/5/018	Central Veterinary Research Institute, Lusaka	MUYOYETA
<u>NUCLEAR MEDICINE</u>		
ZAM/6/004	University Teaching Hospital, Lusaka	LUNGU
<u>NUCLEAR TECHNIQUES IN BIOLOGY</u>		
ZAM/7/002	University Teaching Hospital, Lusaka	MUNKONGE
<u>NUCLEAR TECHNIQUES IN INDUSTRY AND HYDROLOGY</u>		
ZAM/8/003	National Council for Scientific Research, Radioisotopes Research Unit, Lusaka	CHISHIMBA
ZAM/8/005	1. Zambia IDWSSD Project, Department of Water Affairs, Lusaka 2. University of Zambia, Department of Mining, Lusaka 3. National Council for Scientific Research, Water Resources Research Unit, Lusaka	NYUMBU TEMBO SILANGWA
<u>NUCLEAR SAFETY</u>		
ZAM/9/004	Ministry of Health, Radiation Protection Service, Lusaka	KABINGA
ZAM/9/005	Ministry of Health, Radiation Protection Service, Lusaka	KABINGA

COUNTERPART INSTITUTIONS IN ZAMBIA (II)
(By Institute)

LUSAKA

**National Council for Scientific Research
Radiolotopes Research Unit
Lusaka**

ZAM/0/005 Nuclear Analytical Laboratory
ZAM/8/003 Multi-Purpose Gamma Irradiation Facility

**National Council for Scientific Research
Technical Services Unit
Lusaka**

ZAM/4/002 Nuclear Equipment Maintenance
ZAM/4/004 Nuclear Equipment Maintenance

**National Council for Scientific Research
Food Technology Research Unit
Lusaka**

ZAM/5/016 Food Preservation to Reduce Post-Harvest Losses

**National Council for Scientific Research
Water Resources Research Unit
Lusaka**

ZAM/8/005 Groundwater Studies

**Ministry of Health
Radiation Protection Service
Lusaka**

ZAM/9/004 Radiation Protection Services
ZAM/9/005 Radiation Protection Services (Phase II)

**Geological Survey of Zambia
Lusaka**

ZAM/3/003 Nuclear Raw Materials

COUNTERPART INSTITUTIONS IN ZAMBIA (II)
(By Institute)

LUSAKA (cont'd)

**Prescribed Minerals and Materials Commission
Lusaka**

ZAM/3/005 Uranium Resources

**Zambia IDWSSD Project
Department of Water Affairs
Lusaka**

ZAM/8/005 Groundwater Studies

**Department of Agriculture
Central Agricultural Research Station
Lusaka**

ZAM/5/005 Isotopes in Agriculture

**Central Veterinary Research Institute
Lusaka**

ZAM/5/018 Diagnosis of Animal Diseases

**University of Zambia
Faculty of Science
Department of Physics
Lusaka**

ZAM/0/004 Nuclear Physics
ZAM/1/006 Nuclear Sciences and Techniques

**University of Zambia
Department of Mining
Lusaka**

ZAM/3/004 Training in Uranium Exploration

COUNTERPART INSTITUTIONS IN ZAMBIA (II)

(By Institute)

LUSAKA (cont'd)

**University of Zambia
School of Agriculture
Lusaka**

ZAM/5/004 Radioisotopes in Agriculture (Fertilizer Studies)
ZAM/5/005 Isotopes in Agriculture
ZAM/5/012 Isotopes in Agriculture (Soil Moisture Studies)

**University of Zambia
Department of Mining
Lusaka**

ZAM/8/005 Groundwater Studies

**University Teaching Hospital
Lusaka**

ZAM/6/004 Nuclear Medicine
ZAM/7/002 Gamma Sterilized Biological Tissue Grafts

CHILANGA

**Mount Makulu Central Research Station
Soils Section
Chilanga**

ZAM/5/004 Radioisotopes in Agriculture (Fertilizer Studies)
ZAM/5/012 Isotopes in Agriculture (Soil Moisture Studies)

**National Council for Scientific Research
Livestock and Pest Research Centre
Chilanga**

ZAM/5/009 Tsetse Fly Control
ZAM/5/010 Radioisotopes in Animal Science
ZAM/5/015 Tick Resistance to Acaricides

COUNTERPART INSTITUTIONS IN ZAMBIA (II)
(By Institute)

KITWE

**National Council for Scientific Research
Tree Improvement Research Centre
Kitwe**

ZAM/5/013 Induced Mutation Breeding
ZAM/5/014 Induced Mutation Breeding

THE AGENCY'S TECHNICAL CO-OPERATION PROGRAMME WITH ZAMBIA

**LONG-TERM ASSIGNMENTS
(1982 - 1992)**

Project ZAM/0/004 Nuclear Physics

- Task 01 - Organization of Nuclear Science Laboratory
S. MARIPUU (SWE) May 1981 - Jun 1982 13 months
 - To assist the Department of Physics of the University of Zambia in establishing facilities for training both graduate and undergraduate students in nuclear physics.
 - To organize a nuclear science laboratory for teaching and research and to lecture on selected topics in nuclear physics.

RESEARCH CONTRACTS/AGREEMENTS IN ZAMBIA SINCE 1982 ¹
(As of 31 August 1992)

Field of activity	No. of contracts/ agreements	Amount allocated \$
Nuclear techniques in agriculture	9	70 500
Nuclear medicine	1	7 000
Safety in nuclear energy	1	2 500
TOTAL	11	80 000

¹ New awards since 1982

**SCIENTISTS FROM ZAMBIA SERVING AS AGENCY
TECHNICAL CO-OPERATION EXPERTS OR
TRAINING COURSE LECTURERS
1982 - 1992
(As of 31 August 1992)**

Name	No. of assignments	Project(s)
KAPUWE	1	KEN/4/003
MALAMA	1	RAF/5/010
TOTAL	2	

**AGENCY FELLOWSHIPS AND SCIENTIFIC VISITS
HOSTED BY ZAMBIA
1982 - 1992
(As of 31 August 1992)**

Recipient country	No. of fellowships	No. of scientific visits	TOTAL ¹
TANZANIA	1	-	1
TOTAL	1	-	1

¹/ Includes trainees who have completed or at least started their studies.

**REGIONAL AND INTERREGIONAL TRAINING EVENTS
HOSTED BY ZAMBIA
1982 - 1992
(As of 31 August 1992)**

Course No.	Course Title	Participants	Year
RAF/4/002 (001)	RTC on nuclear electronics	15	1983
RAF/4/006 (001)	RTC on nuclear instrumentation maintenance	16	1989
	TOTAL	31	