



INTERNATIONAL ATOMIC ENERGY AGENCY



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IAEA-CPS-94/08
24 August 1994
Original: ENGLISH

COUNTRY PROGRAMME SUMMARY

**THE AGENCY'S TECHNICAL CO-OPERATION
PROGRAMME WITH
PORTUGAL
1984 - 1994
COUNTRY PROGRAMME SUMMARIES**

DEPARTMENT OF TECHNICAL CO-OPERATION

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EVALUATION SECTION

DEPARTMENT OF TECHNICAL CO-OPERATION

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PORTUGAL
1984 - 1994
COUNTRY PROGRAMME SUMMARIES**

This report contains a review of the Agency's technical co-operation activities in Portugal carried out during 1984 - 1994. 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.

PORTUGAL

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INTRODUCTION

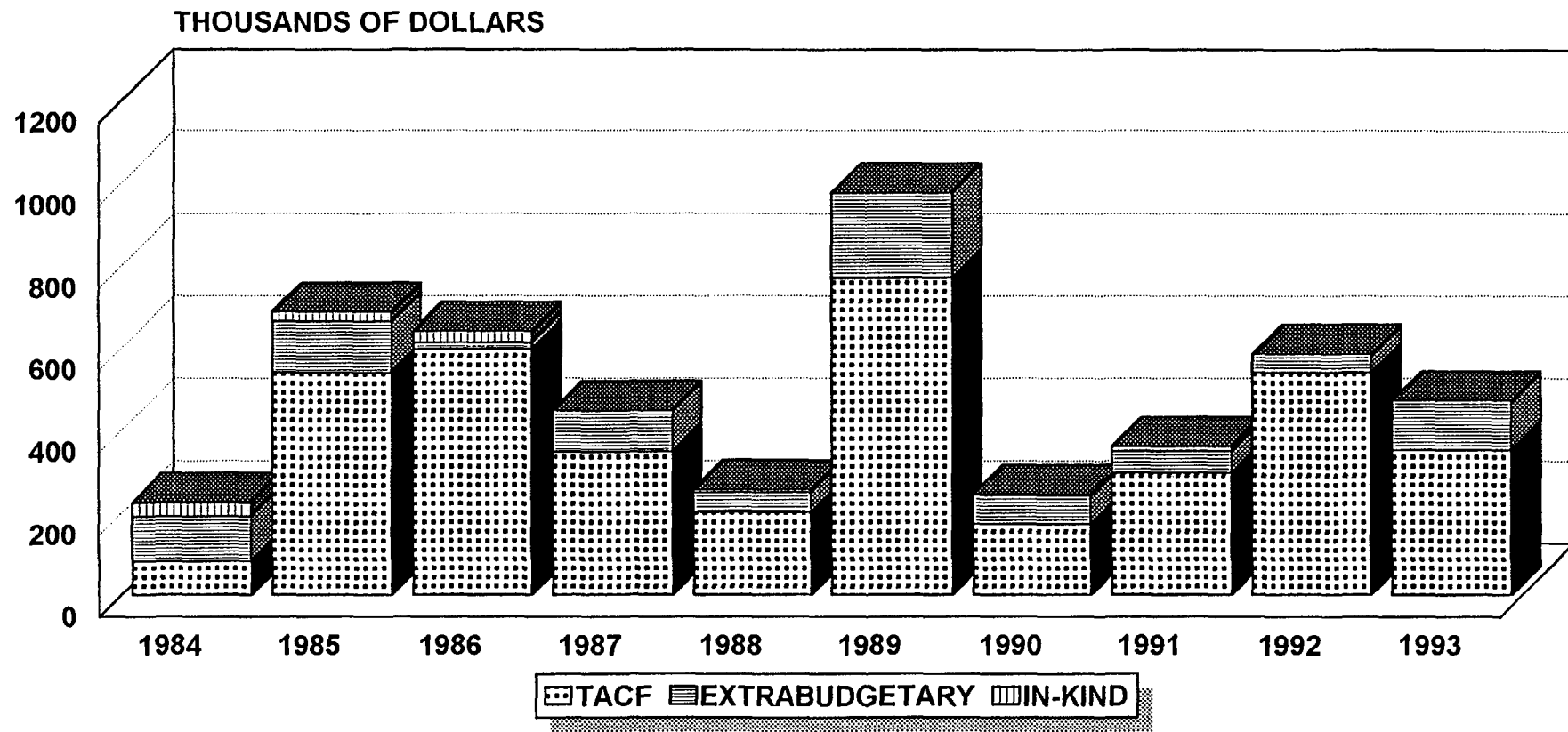
The country programme summary reported on here is one in the series of such studies being undertaken of the Agency's TC programme with Member States. With almost \$5.7 million of Agency support received, Portugal ranks 36th among all recipients of technical assistance during the period 1958 through 1993.

The bulk of the assistance received over the past ten years has been provided in the form of equipment (84%), supplemented to almost equal shares by expert services (9%) and training (7%). The best part of the resources was made available through the TACF (79%), the rest was provided by extrabudgetary contributions (19%) and through assistance in kind (2%).

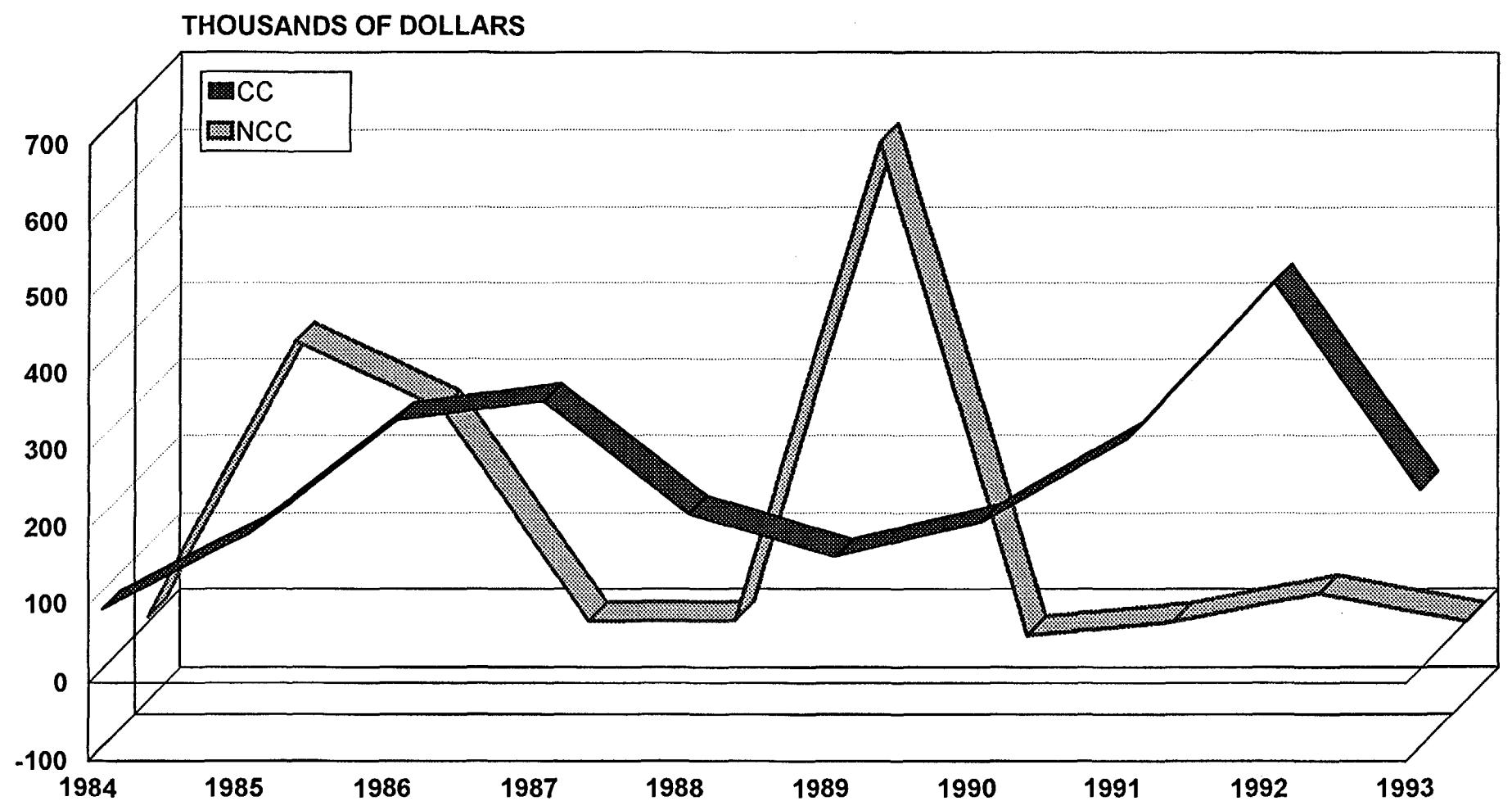
More than one half of the total disbursements under operational projects and projects completed during the period 1984 through mid-August 1994 went to two major areas -- industry and hydrology (29%) and nuclear physics and chemistry (28%). Substantial shares were also held by nuclear engineering and technology (17%) and nuclear safety (9%), while only smaller amounts, representing shares from 3% to 6%, went to the other major fields of the Agency's competence.

Since 1984, scientists from Portugal have completed 65 assignments as Agency experts and training course lecturers or as participants in co-ordination meetings. During the same period, Portugal has hosted 14 fellowships and scientific visits as well as one interregional training course for a total of 17 participants.

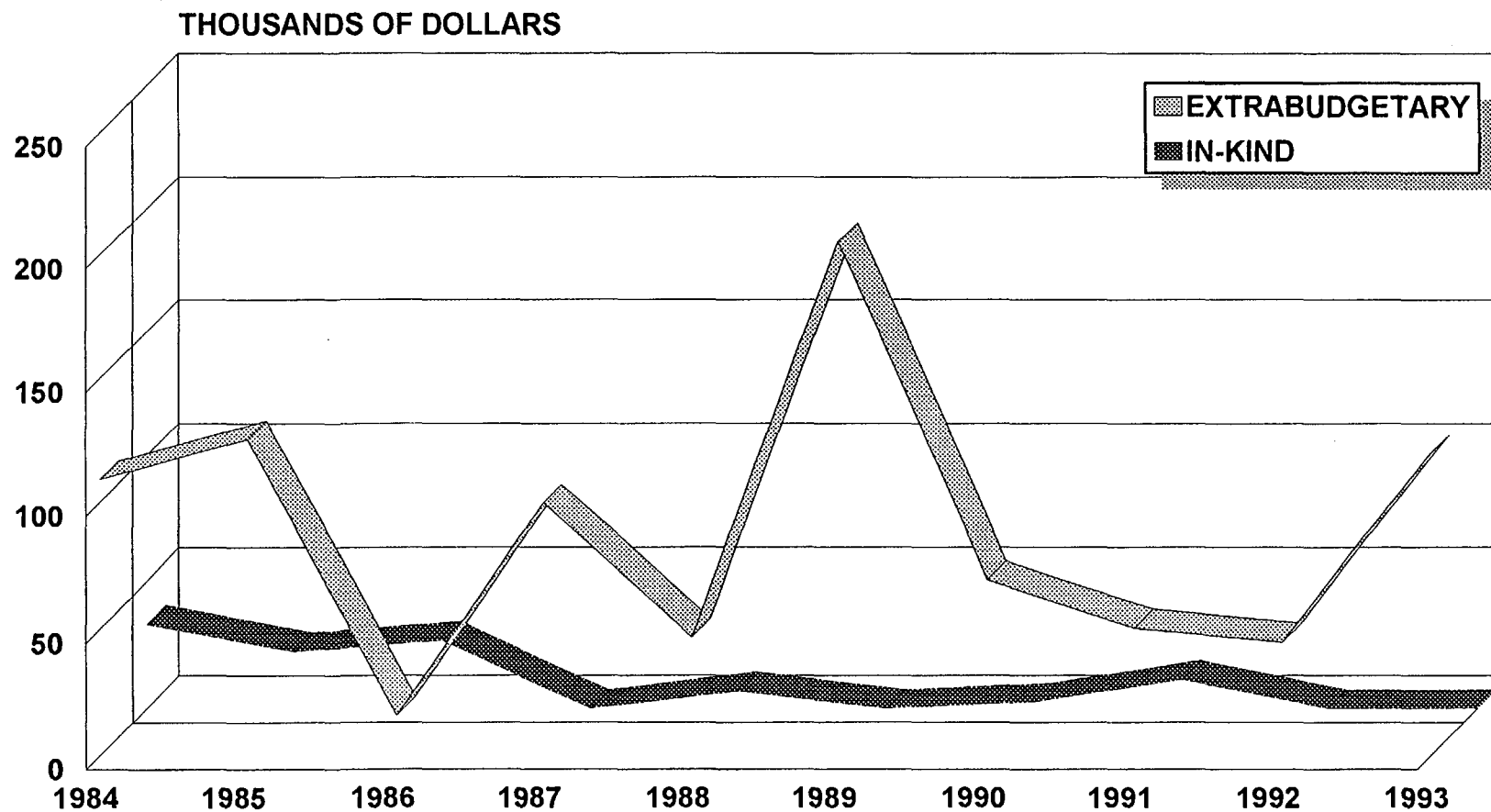
ASSISTANCE PROVIDED BY THE AGENCY TO PORTUGAL BY SOURCE (1984 - 1993)



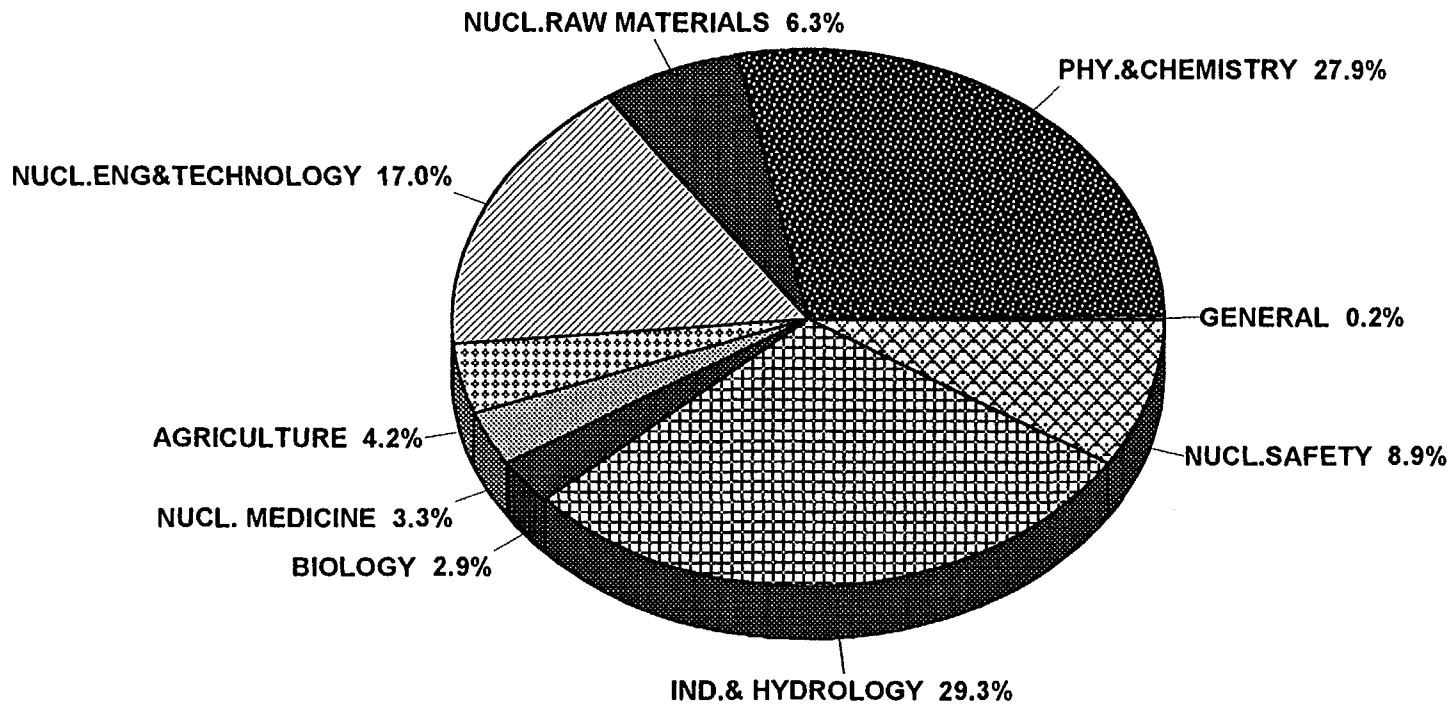
TACF ASSISTANCE PROVIDED TO PORTUGAL (1984 - 1993) BY CC AND NCC



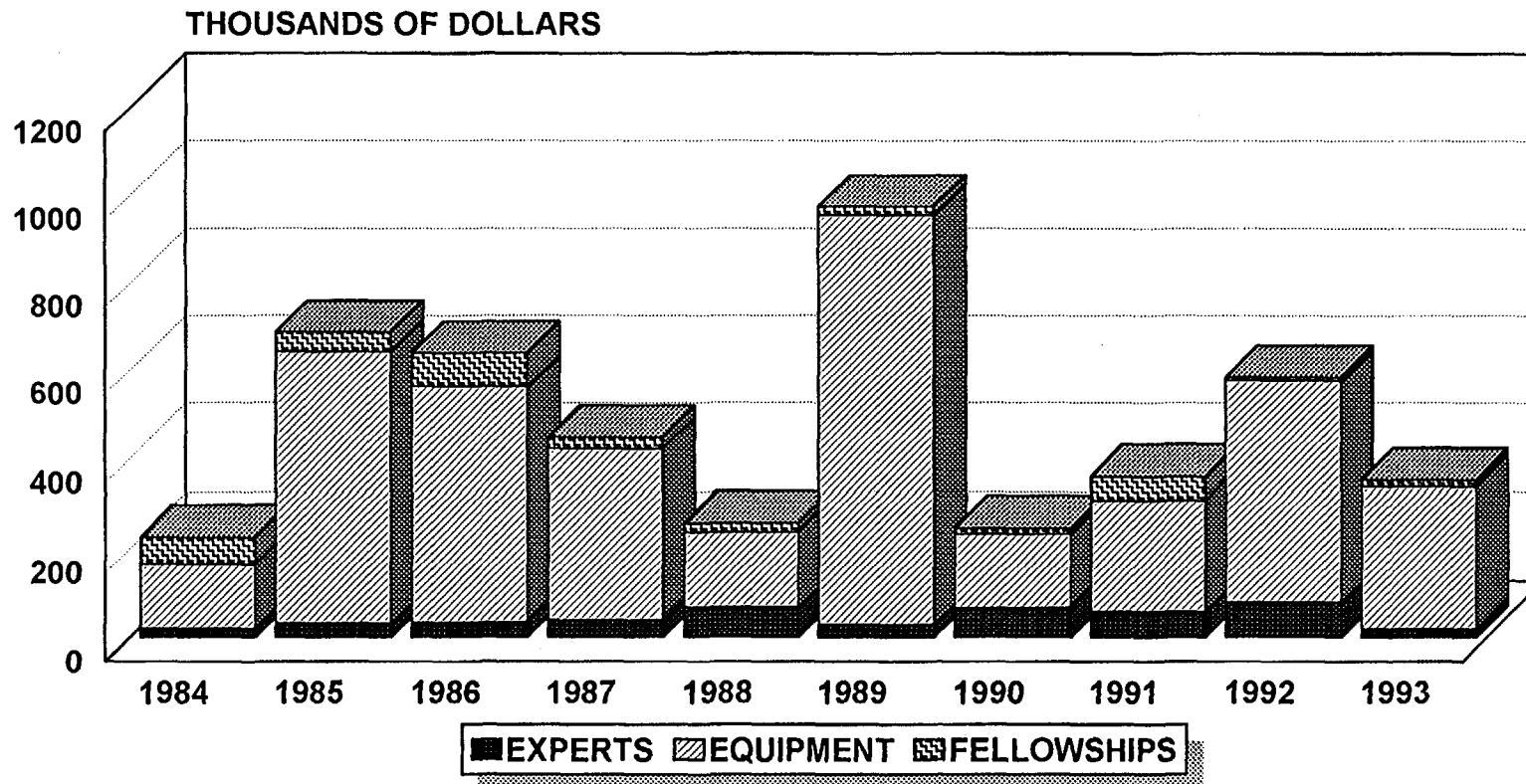
EXTRABUDGETARY AND IN-KIND ASSISTANCE PROVIDED TO PORTUGAL (1984 - 1993)



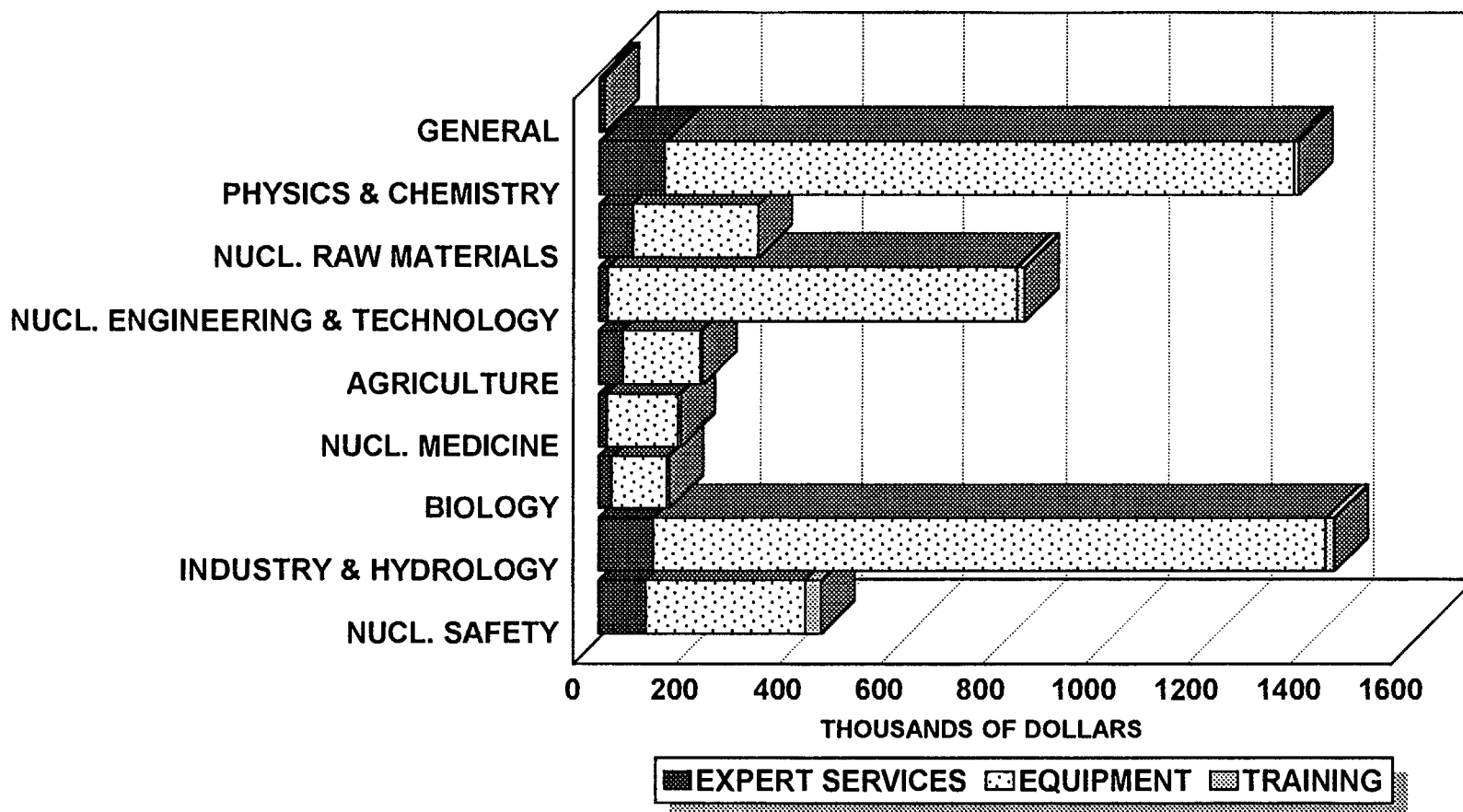
TC PROJECT DISBURSEMENTS IN PORTUGAL BY SECTOR (1984 - 1994)



ASSISTANCE PROVIDED BY THE AGENCY TO PORTUGAL BY TYPE (1984 - 1993)



EXPERT SERVICES, EQUIPMENT AND PROJECT-FUNDED TRAINING PROVIDED TO PORTUGAL BY SECTOR (1984 - 1994)



THE AGENCY'S TECHNICAL CO-OPERATION PROGRAMME WITH PORTUGAL

ALL SOURCES

PORTUGAL'S RANKING AS A TC RECIPIENT
1958 - 1993
(in \$1000)

YEAR	RANKING	AMOUNT
1958-83	48 th	931.8
1984	36 th	224.0
1985	11 th	686.8
1986	17 th	639.3
1987	30 th	446.2
1988	37 th	255.4
1989	6 th	975.0
1990	47 th	244.3
1991	37 th	358.8
1992	24 th	584.2
1993	37 th	350.9
1958-93	36 th	5696.7

**"TOP FIVE" RECIPIENTS OF AGENCY ASSISTANCE
1958 - 1993 (in \$1000)**

ALL SOURCES

Year	I	II	III	IV	V	PORTUGAL
1958-83	BRA 8887.6	IND 7197.4	EGY 7024.5	PAK 6008.9	ARG 5912.2	48 th - 931.8
1984	EGY 3625.9	PER 1750.4	THA 1094.6	CUB 1028.7	PHI 881.2	36 th - 224.0
1985	EGY 2494.8	PER 1120.7	THA 1117.4	BGD 1068.2	PHI 963.7	11 th - 686.8
1986	EGY 2317.0	BRA 1452.9	THA 1169.4	POL 1050.3	BGD 896.4	17 th - 639.3
1987	HUN 3452.6	EGY 1775.4	THA 1742.4	INS 1312.5	YUG 1223.2	30 th - 446.2
1988	EGY 1486.9	BUL 1361.6	CPR 1278.5	THA 1158.7	BRA 1096.7	37 th - 255.4
1989	CPR 1542.3	EGY 1505.1	THA 1205.3	BRA 1096.5	INS 999.1	6 th - 975.0
1990	POL 2308.1	CPR 2005.0	VIE 1589.2	INS 1412.6	BRA 1229.1	47 th - 244.3
1991	INS 1305.2	CPR 975.0	EGY 959.8	BRA 951.2	BUL 934.7	37 th - 358.8
1992	EGY 1586.3	INS 1342.1	CPR 1328.8	MEX 1127.8	POL 1036.4	24 th - 584.2
1993	INS 1285.9	CPR 1091.7	PAK 1012.2	EGY 905.3	IRA 810.1	37 th - 350.9
1958-93	EGY 24713.9	BRA 18541.4	THA 16125.1	INS 15011.8	PER 13772.0	36 th - 5696.7

**"TOP FIVE" RECIPIENTS OF AGENCY ASSISTANCE
1958 - 1993 (in \$1000)**

TECHNICAL ASSISTANCE AND CO-OPERATION FUND

Year	I	II	III	IV	V	PORTUGAL
1958-83	EGY 3455.2	HUN 3221.6	PAK 2839.0	THA 2354.1	BRA 2158.9	53 rd - 565.1
1984	EGY 1197.2	CUB 655.6	ECU 565.6	BGD 506.3	BUL 472.4	58 th - 81.6
1985	BGD 991.8	VIE 745.0	THA 708.7	BRA 571.8	POR 538.7	5 th - 538.7
1986	BRA 1381.8	THA 871.9	POL 833.5	BGD 823.9	SYR 751.8	8 th - 596.4
1987	HUN 3305.2	DRK 986.8	BUL 888.5	INS 885.8	EGY 878.9	28 th - 346.7
1988	BUL 1195.6	PER 856.5	EGY 768.6	INS 751.7	MAL 656.0	37 th - 201.5
1989	EGY 990.9	CPR 868.2	POR 769.6	CHI 756.9	MAL 619.4	3 rd - 769.6
1990	POL 1562.3	VIE 1518.8	DRK 1156.2	IRA 958.0	YUG 933.4	52 nd - 172.4
1991	BUL 893.1	PAK 868.8	INS 855.1	VIE 817.6	CPR 814.5	38 th - 296.7
1992	EGY 1255.7	CPR 1009.0	VIE 872.8	INS 826.6	IRA 795.5	22 nd - 539.3
1993	INS 1040.5	CPR 896.5	PAK 847.6	IRA 807.4	THA 721.5	45 th - 231.4
1958-93	EGY 11549.2	PAK 8963.2	VIE 8908.2	POL 8820.1	INS 8814.1	32 nd - 4339.4

ASSISTANCE PROVIDED BY THE AGENCY TO PORTUGAL

Financial Summary 1984 - 1993
(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
1984	19.9	144.7	59.4	-	-	224.0	-	75.8	5.8	109.0	33.4	224.0
1985	30.5	610.4	45.9	-	-	686.8	-	173.5	365.2	125.5	22.6	686.8
1986	32.1	530.4	76.8	-	-	639.3	-	320.6	275.8	16.0	26.9	639.3
1987	38.7	381.9	25.6	-	-	446.2	-	346.0	0.7	99.5	-	446.2
1988	66.7	169.3	19.4	-	-	255.4	-	199.3	2.2	46.8	7.1	255.4
1989	28.1	927.6	19.3	-	-	975.0	-	143.1	626.5	205.4	-	975.0
1990	65.9	164.9	13.5	-	-	244.3	-	189.5	(17.1)	69.3	2.6	244.3
1991	56.9	248.0	53.9	-	-	358.8	-	296.7	-	50.5	11.6	358.8
1992	78.1	498.2	7.9	-	-	584.2	-	503.3	36.0	44.9	-	584.2
1993	18.5	318.4	14.0	-	-	350.9	-	231.4	-	119.5	-	350.9
1984-93	435.4	3 993.8	335.7	-	-	4 764.9	-	2 479.2	1 295.1	886.4	104.2	4 764.9

TECHNICAL CO-OPERATION PROJECTS IN PORTUGAL
BY SECTOR

PROJECTS COMPLETED AND OPERATIONAL 1984 - 1994

TOTAL PROJECT ALLOTMENTS AND DISBURSEMENTS
(as of mid-August 1994)

SECTOR	NO. OF PROJECTS	ALLOTMENTS \$	% OF TOTAL	DISBURSEMENTS \$	% OF TOTAL
General atomic energy development	1	9 900	0.2	10 963	0.2
Nuclear physics and chemistry	8	1 367 066	27.2	1 368 915	27.9
Nuclear raw materials	6	312 435	6.2	311 129	6.3
Nuclear engineering and technology	3	826 573	16.5	833 937	17.0
Nuclear techniques in agriculture	3	222 642	4.4	203 709	4.2
Nuclear medicine	2	161 330	3.2	162 141	3.3
Nuclear techniques in biology	1	150 373	3.0	140 386	2.9
Nuclear techniques in industry and hydrology	7	1 541 550	30.7	1 439 297	29.3
Nuclear safety	8	429 308	8.6	435 916	8.9
TOTAL	39	5 021 177	100.0	4 906 393	100.0

TECHNICAL CO-OPERATION PROJECTS IN PORTUGAL
 COMPLETED AND OPERATIONAL, BY SECTOR, 1984 - 1994
 (As of mid-August 1994)

Sector	No. of projects	Total project allotments \$	Total project disbursements \$
<u>Completed projects</u>			
General atomic energy development	1	9 900	10 963
Nuclear physics and chemistry	7	909 566	916 216
Nuclear raw materials	5	268 110	275 223
Nuclear engineering and technology	3	826 573	833 937
Nuclear techniques in agriculture	2	136 637	142 465
Nuclear medicine	1	56 020	58 096
Nuclear techniques in biology	-	-	-
Nuclear techniques in industry & hydrology	4	1 271 250	1 278 902
Nuclear safety	7	404 238	420 375
TOTAL	30	3 882 294	3 936 177
<u>Operational projects</u>			
General atomic energy development	-	-	-
Nuclear physics and chemistry	1	457 500	452 699
Nuclear raw materials	1	44 325	35 906
Nuclear engineering and technology	-	-	-
Nuclear techniques in agriculture	1	86 005	61 244
Nuclear medicine	1	105 310	104 045
Nuclear techniques in biology	1	150 373	140 386
Nuclear techniques in industry & hydrology	3	270 300	160 395
Nuclear safety	1	25 070	15 541
TOTAL	9	1 138 883	970 216

**EXPERT SERVICES, EQUIPMENT AND PROJECT-FUNDED TRAINING PROVIDED TO PORTUGAL, BY SECTOR
PROJECTS COMPLETED AND OPERATIONAL 1984 - 1994
(As of mid-August 1994)**

FIELD	TOTAL PROJECT ALLOTMENTS				TOTAL PROJECT DISBURSEMENTS			
	EXPERT SERVICES		EQUIPMENT	TRAINING	EXPERT SERVICES		EQUIPMENT	TRAINING
	M/M	\$	\$	\$	M/M	\$	\$	\$
General atomic energy development	1/27	9 900	-	-	1/26	10 963	-	-
Nuclear physics and chemistry	13/21	116 266	1 241 505	9 295	13/04	130 454	1 229 367	9 094
Nuclear raw materials	8/26	69 740	242 695	-	7/23	66 535	244 594	-
Nuclear engineering and technology	1/11	9 980	802 990	13 603	1/15	17 344	802 990	13 603
Nuclear techniques in agriculture	4/24	47 100	167 742	7 800	4/07	47 705	152 201	3 803
Nuclear medicine	1/12	10 920	140 010	10 400	1/12	16 944	139 690	5 507
Nuclear techniques in biology	2/14	22 490	115 283	12 600	2/04	25 540	109 516	5 330
Nuclear techniques in industry & hydrology	16/16	135 540	1 352 273	53 737	13/14	108 679	1 313 541	17 077
Nuclear safety	15/02	84 585	313 106	31 617	11/28	93 127	311 585	31 204
TOTAL	66/03	506 521	4 375 604	139 052	57/13	517 291	4 303 484	85 618

AGENCY FELLOWS FROM PORTUGAL

1984 - 1994¹
(As of mid-August 1994)

Sector	No. of fellowships	No. of months/days	Host countries
General atomic energy development	-	-	-
Nuclear physics	14	43/24	BEL, HUN, SPA, GER, DEN, BRA, USA
Nuclear chemistry	7	27/09	NET, USA, HUN, GER, IAEA
Nuclear raw materials	6	6/16	FRA, CAN, USA
Nuclear engineering and technology	3	19/25	USA, FRA, IAEA
Nuclear techniques in agriculture	4	11/17	NET, IAEA
Nuclear medicine	2	2/00	UK
Nuclear techniques in biology	4	11/05	DEN, YUG, MOC, NET
Nuclear techniques in industry and hydrology	5	13/26	GER, FRA, YUG, HUN, IAEA
Nuclear safety	10	41/27	FRA, SPA, USA, GER, BRA, CAN
TOTAL	55	177/29	

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

**PORTUGAL
LONG-TERM FELLOWSHIPS
1984 - 1994
(As of mid-August 1994)**

Name	Field of study		Host country	Date	Duration	Project
DUARTE DE ARAUJO	Analytical nuclear physics	1L	BEL	Oct.85 - Apr.87	18/02	POR/1/003
FERRO PEREIRA GONCALVES	Neutron physics	1E	HUN	Jan.84 - Jan.85	12/01	INT/1/018
CASTANHEIRA JOAQUIM	Radiopharmacology	2G	NET	Sep.84 - Sep.85	12/00	POR/2/010
VAZ DAS NEVES	Radiopharmacology	2G	USA	Jul.84 - Jul.85	12/02	POR/2/010
ALMEIDA MIRANDA	Nuclear fuel management	4N	USA	Aug.85 - Aug.86	12/01	-

PORTUGUESE NATIONALS WHO WERE AWARDED MORE THAN ONE
FELLOWSHIP OR SCIENTIFIC VISIT
1984 - 1994
(As of mid-August 1994)

Name	Field of study		Host country	Date	Duration	Project
ALMEIDA VIEIRA ALBERTO	1. Solid state physics 2. Solid state physics	1G 1G	USA USA	Nov.90 - Dec.90 Jan.93	0/12 0/12	POR/1/004 POR/1/007
CARDEIRA	1. NPP safety system analysis 2. Research reactors	9F 4B	FRA FRA	Oct.84 - May 85 Feb.88 - Apr.88	7/04 3/00	POR/9/004 POR/4/012
FERRO PEREIRA GONCALVES	1. Neutron physics 2. Neutron physics	1E 1E	HUN HUN	Jan.84 - Jan.85 May 86 - Jul.86	12/01 2/05	INT/1/018 INT/1/018
FREITAS MOREIRA	1. Analytical nuclear physics 2. Nutritional and health-related environmental studies	1L 7J	BEL NET	Sep.85 - Feb.86 Nov.93 - Dec.93	6/00 1/00	- POR/8/006
MIMO CARREIRA	1. Isotope hydrology 2. Groundwater hydrology	8O 8M	IAEA IAEA GER	Mar.89 - Jul.89 Mar.91	4/01 0/16	POR/8/004 POR/8/004
NEVES OLIVEIRA DE MELO E SILVA	1. Iodination of steroid hormones 2. Production and control of radiopharmaceuticals	2F 6G	HUN UK	Apr.90 - May 90 Nov.92 - Dec.92	1/00 1/00	RER/0/003 POR/6/003

AGENCY TRAINING COURSES WITH PORTUGUESE PARTICIPATION

1984 - 1994
(As of mid-August 1994)

Field	Number of participants	Number of courses
General atomic energy development	1	1
Nuclear physics	6	6
Nuclear chemistry	2	2
Nuclear raw materials	3	2
Nuclear engineering and technology	5	4
Nuclear techniques in agriculture	5	5
Nuclear medicine	11	9
Nuclear techniques in biology	1	1
Nuclear techniques in industry & hydrology	3	3
Nuclear safety	10	10
TOTAL	47	43

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY PORTUGUESE NATIONALS
1984 - 1994
(As of mid-August 1994)**

Name	Course No.	Course title	Year	Location
CARDEIRA	INT/4/092 (001) INT/9/104 (001)	ITC on the application of small computers to research reactor operations ITC on safety in the operation of research reactors	1987 1990	YUG USA
DA CONCEICAO SEVERO	INT/9/058 (001) INT/9/068 (001)	ITC on radioactive waste management ITC on management and disposal of radioactive wastes	1985 1986	FRA CAN
TRINDADE	INT/9/074 (001) INT/9/099 (001) INT/9/127 (001)	ITC on radiation protection ITC on management of radioactive wastes with regard to radioisotope applications ITC on safe operation and utilization of research reactors	1987 1989 1992	FRA GER FRA

PROJECTS COMPLETED IN PORTUGAL SINCE 1984
(As of mid-August 1994)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1981	POR/0/003	Nuclear power programme	1/27	9 900	-	-	1/26	10 963	-	-	1986
1982	POR/1/002	Secondary standards dosimetry laboratory	3/19	21 180	240 160	3 000	3/19	22 925	240 618	3 467	1988
1983	POR/1/003	Accelerator utilization	3/00	20 400	159 112	-	2/26	20 016	158 210	-	1988
1987	POR/1/004	Stainless steel properties	1/09	16 911	83 640	-	1/09	16 911	83 640	-	1991
1988	POR/1/005	Neutron scattering spectrometer	0/21	9 416	112 896	-	0/21	9 416	109 796	-	1994
1991	POR/1/007	A Moessbauer study of redox equilibria in glasses	2/04	19 285	19 965	3 295	2/04	27 473	20 450	3 237	1993
1983	POR/2/009	Actinide chemistry	-	-	59 825	-	-	-	59 825	-	1986
1984	POR/2/010	Radiopharmaceutical development	0/19	6 769	133 712	-	0/20	6 520	133 712	-	1988

**PROJECTS COMPLETED IN PORTUGAL SINCE 1984
(As of mid-August 1994)**

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1983	POR/3/006	Uranium ore processing	1/00	6 200	45 192	-	0/24	5 790	45 192	-	1987
1984	POR/3/007	Uranium exploration (DGGM)	5/05	34 925	51 365	-	5/05	34 101	51 364	-	1988
1985	POR/3/008	Leaching of ore from the Azere region	-	-	40 439	-	-	-	40 439	-	1989
1989	POR/3/009	Uranium exploration	0/09	4 480	23 340	-	0/09	4 480	23 340	-	1992
1991	POR/3/010	Uranium exploration and environmental monitoring	0/27	8 160	54 009	-	0/27	16 508	54 009	-	1994
1985	POR/4/010	Reactor pneumatic transfer system	-	-	54 377	-	-	-	54 377	-	1987
1986	POR/4/011	Nuclear fuel cycle data bank	0/03	690	-	-	0/03	271	-	-	1987
1987	POR/4/012	Research reactor modernization	1/08	9 290	748 613	13 603	1/12	17 073	748 613	13 603	1993
1988	POR/5/002	Nuclear techniques in animal science	2/04	16 420	44 980	4 650	2/05	19 426	45 450	3 803	1991

PROJECTS COMPLETED IN PORTUGAL SINCE 1984
(As of mid-August 1994)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1989	POR/5/003	Nitrogen fixation	1/20	19 880	50 707	-	1/20	23 079	50 707	-	1993
1987	POR/6/002	Medical physics and clinical dosimetry	0/28	6 580	49 440	-	0/28	8 656	49 440	-	1990
1983	POR/8/002	Irradiation facility	6/00	40 750	877 826	1 400	6/01	44 618	881 051	2 236	1991
1983	POR/8/003	Low-level radio-activity measurements	0/15	3 450	44 939	-	0/15	1 676	44 939	-	1988
1986	POR/8/004	Isotope hydrology	4/21	36 490	206 333	11 687	4/21	34 363	206 908	11 687	1993
1989	POR/8/005	Radiation technology	0/25	7 375	41 000	-	0/26	10 424	41 000	-	1992
1978	POR/9/002	Nuclear power safety	8/00	28 900	17 500	-	7/22	42 816	17 389	-	1986
1983	POR/9/004	Nuclear power safety	2/00	12 400	-	-	0/14	2 600	-	-	1987
1984	POR/9/005	Nuclear power plant siting (EDP)	1/08	8 360	-	-	1/08	5 779	-	-	1987
1985	POR/9/006	Radiation protection in uranium mining and milling	0/10	2 300	-	-	0/10	1 266	-	-	1988

PROJECTS COMPLETED IN PORTUGAL SINCE 1984
(As of mid-August 1994)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1987	POR/9/007	Environmental radio-activity monitoring	0/09	5 535	117 742	8 000	0/09	5 535	117 742	7 737	1993
1988	POR/9/008	Radiation and environmental protection	0/24	6 040	167 364	6 080	0/24	10 681	167 175	6 080	1993
1989	POR/9/009	Uranium mining and milling wastes	0/24	6 480	-	17 537	0/24	18 188	-	17 387	1992
	TOTAL	30 Projects	52/09	368 566	3 444 476	69 252	50/12	421 554	3 445 386	69 237	

**OPERATIONAL PROJECTS IN PORTUGAL
(As of mid-August 1994)**

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS			
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING
			M/M	\$	\$	\$	M/M	\$	\$	\$
1991	POR/1/006	Upgrading and use of Van de Graaff accelerator	2/09	22 305	432 195	3 000	1/25	27 193	423 116	2 390
1993	POR/3/011	Environmental monitoring and uranium exploration	1/15	15 975	28 350	-	0/18	5 656	30 250	-
1993	POR/5/004	Nitrogen fixation in crop production	1/00	10 800	72 055	3 150	0/12	5 200	56 044	-
1991	POR/6/003	Radioimmunoassay techniques for clinical diagnosis	0/14	4 340	90 570	10 400	0/14	8 288	90 250	5 507
1991	POR/7/002	Dietary studies in Portugal	2/14	22 490	115 283	12 600	2/04	25 540	109 516	5 330
1993	POR/8/006	Monitoring of trace element air pollution	2/00	21 150	97 000	12 450	0/22	9 748	55 245	3 154
1993	POR/8/007	Study of Aveiro's cretaceous aquifer using isotope technique	0/15	5 175	25 175	3 000	-	-	24 398	-
1993	POR/8/008	Radiation polymer laboratory	2/00	21 150	60 000	25 200	0/19	7 850	60 000	-
1991	POR/9/010	Training in radiation protection	1/17	14 570	10 500	-	0/07	6 262	9 279	-
	TOTAL	9 Projects	13/24	137 955	931 128	69 800	7/01	95 737	858 098	16 381

COUNTERPART INSTITUTIONS IN PORTUGAL (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>GENERAL ATOMIC ENERGY DEVELOPMENT</u>		
POR/0/003	Ministry of Industry and Energy, General Directorate for Energy, Department of Nuclear Energy, Lisbon	CARREIRA PICH
<u>NUCLEAR PHYSICS AND CHEMISTRY</u>		
POR/1/002	1. Francisco Gentil Institute of Oncology, Radiotherapy Service, Lisbon 2. Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	GOMES DA SILVA VAZ CARREIRO COUTINHO GUARDADO CARVALHO
POR/1/003	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	DA SILVA
POR/1/004	University of Coimbra, Faculty of Science and Technology, Department of Physics, Coimbra	AYRES DE CAMPOS
POR/1/005	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	CARVALHO
POR/1/006	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	DA SILVA
POR/1/007	University of Coimbra, Faculty of Science and Technology, Department of Physics, Coimbra	AYRES DE CAMPOS SA CAMPOS GIL

COUNTERPART INSTITUTIONS IN PORTUGAL (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR PHYSICS AND CHEMISTRY (cont'd)</u>		
POR/2/009	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	PIRES DE MATOS
POR/2/010	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	PATRICIO CATELA
<u>NUCLEAR RAW MATERIALS</u>		
POR/3/006	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	BANHA DELMAS MARQUES COELHO
POR/3/007	Ministry of Industry and Energy, General Directorate for Geology and Mines, Lisbon	DANIEL
POR/3/008	Empresa Nacional de Uranio, Nelas	TRANCOSO RIBEIRO
POR/3/009	Ministry of Industry and Energy, General Directorate for Geology and Mines, Lisbon	PEREIRA
POR/3/010	Ministry of Industry and Energy, General Directorate for Geology and Mines, Lisbon	MENDONCA TORRES RODRIGUES PIRES
POR/3/011	Ministry of Industry and Energy, General Directorate for Geology and Mines, Lisbon	MENDONCA TORRES

COUNTERPART INSTITUTIONS IN PORTUGAL (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR ENGINEERING AND TECHNOLOGY</u>		
POR/4/010	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	MENEZES
POR/4/011	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	CORREIA DE RAMALHO CARLOS
POR/4/012	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	MENEZES
<u>AGRICULTURE</u>		
POR/5/002	Estacao Nacional de Seleccao e Reproducao, Lisbon	ROBALO SILVA
POR/5/003	Estacao Agronomica Nacional, Dept. de Pedologia, Oeiras	SEQUEIRA
POR/5/004	Estacao Agronomica Nacional, Dept. de Pedologia, Oeiras	SEQUEIRA
<u>NUCLEAR MEDICINE</u>		
POR/6/002	Francisco Gentil Institute of Oncology, Radiotherapy Service, Lisbon	GOMES DA SILVA
POR/6/003	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	PATRICIO CATELA

COUNTERPART INSTITUTIONS IN PORTUGAL (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR TECHNIQUES IN BIOLOGY</u>		
POR/7/002	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	MARTINHO VARELA REIS
<u>NUCLEAR TECHNIQUES IN INDUSTRY AND HYDROLOGY</u>		
POR/8/002	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	CARVALHO ANDRADE
POR/8/003	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	PEIXOTO CABRAL
POR/8/004	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	PEIXOTO CABRAL MONGE SOARES
POR/8/005	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	CARVALHO
POR/8/006	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	FREITAS MOREIRA
POR/8/007	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	MONGE SOARES
POR/8/008	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	ANDRADE

COUNTERPART INSTITUTIONS IN PORTUGAL (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR SAFETY</u>		
POR/9/002	Ministry of Industry and Energy, Secretary of State of Energy and Basic Industry, Bureau of Nuclear Protection and Safety, Lisbon	MARQUES DE CARVALHO
POR/9/004	Ministry of Industry and Energy, Secretary of State of Energy and Basic Industry, Bureau of Nuclear Protection and Safety, Lisbon	RORIZ
POR/9/005	Electricidade de Portugal, Lisbon	FERNANDES FORTE
POR/9/006	Empresa Nacional de Uranio, Nelas	SOARES DO ROSARIO FERREIRA
POR/9/007	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	BETTENCOURT
POR/9/008	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	GALVAO VAZ CARREIRO
POR/9/009	Secretary of State for Energy and Basic Industry, National Uranium Undertaking, Canas de Senhorim	FREIRE
POR/9/010	Ministry of Industry and Energy, National Laboratory of Engineering and Industrial Technology, Sacavem	VAZ CARREIRO

COUNTERPART INSTITUTIONS IN PORTUGAL (II)
(By Institute)

LISBON

Ministry of Industry and Energy
General Directorate for Energy
Department of Nuclear Energy
Lisbon

POR/0/003 Nuclear Power Programme

Ministry of Industry and Energy
General Directorate for Geology and Mines
Lisbon

POR/3/007 Uranium Exploration (DGGM)
POR/3/009 Uranium Exploration
POR/3/010 Uranium Exploration and Environmental Monitoring
POR/3/011 Environmental Monitoring and Uranium Exploration

Ministry of Industry and Energy
Secretary of State of Energy and Basic Industry
Lisbon

POR/9/002 Nuclear Power Safety
POR/9/004 Nuclear Power Safety

Francisco Gentil Institute of Oncology
Radiotherapy Service
Lisbon

POR/1/002 Secondary Standards Dosimetry Laboratory
POR/6/002 Medical Physics and Clinical Dosimetry

Estacao Nacional de Seleccao e Reproducao
Lisbon

POR/5/002 Nuclear Techniques in Animal Science

Electricidade de Portugal
Lisbon

POR/9/005 Nuclear Power Plant Siting (EDP)

COUNTERPART INSTITUTIONS IN PORTUGAL (II)
(By Institute)

SACAVEM

Ministry of Industry and Energy
National Laboratory of Engineering and Industrial Technology
Sacavem

POR/1/002	Secondary Standards Dosimetry Laboratory
POR/1/003	Accelerator Utilization
POR/1/005	Neutron Scattering Spectrometer
POR/1/006	Upgrading and Use of Van de Graaff Accelerator
POR/2/009	Actinide Chemistry
POR/2/010	Radiopharmaceutical Development
POR/3/006	Uranium Ore Processing
POR/4/010	Reactor Pneumatic Transfer System
POR/4/011	Nuclear Fuel Cycle Data Bank
POR/4/012	Research Reactor Modernization
POR/6/003	Radioimmunoassay Techniques for Clinical Diagnosis
POR/7/002	Dietary Studies in Portugal
POR/8/002	Irradiation Facility
POR/8/003	Low-level Radioactivity Measurements
POR/8/004	Isotope Hydrology
POR/8/005	Radiation Technology
POR/8/006	Monitoring of Trace Element Air Pollution
POR/8/007	Study of Aveiro's Cretaceous aquifer using isotope technique
POR/8/008	Radiation Polymer Laboratory
POR/9/007	Environmental Radioactivity Monitoring
POR/9/008	Radiation and Environmental Protection
POR/9/010	Training in Radiation Protection

COIMBRA

University of Coimbra
Faculty of Science and Technology
Department of Physics
Coimbra

POR/1/004	Stainless Steel Properties
POR/1/007	A Moessbauer Study of Redox Equilibria in Glasses

COUNTERPART INSTITUTIONS IN PORTUGAL (II)
(By Institute)

NELAT

Empresa Nacional de Uranio
Nelas

POR/3/008 Leaching of Ore from the Azere Region
POR/9/006 Radiation Protection in Uranium Mining and Milling

OEIRAS

Estacao Agronomica Nacional
Dept. de Pedologia
Oeiras

POR/5/003 Nitrogen Fixation
POR/5/004 Nitrogen Fixation in Crop Production

CANAS DE SENHORIM

Secretary of State for Energy and Basic Industry
National Uranium Undertaking
Canas de Senhorim

POR/9/009 Uranium Mining and Milling wastes

**THE AGENCY'S TECHNICAL CO-OPERATION PROGRAMME WITH
PORTUGAL
(1984 - 1994)**

LONG-TERM EXPERT ASSIGNMENTS

NONE

RESEARCH CONTRACTS/AGREEMENTS IN PORTUGAL SINCE 1984 ¹
(As of mid-August 1994)

Field of activity	No. of contracts/ agreements	Amount allocated \$
Nuclear physics	1	5 000
Nuclear chemistry	4	8 500
Nuclear engineering and technology	2	20 100
Nuclear techniques in agriculture	2	18 000
Nuclear medicine	3	34 000
Nuclear techniques in biology	4	34 300
Nuclear techniques in industry & hydrology	1	7 000
Safety in nuclear energy	2	4 500
TOTAL	19	131 400

¹/ New awards since 1984

**SCIENTISTS FROM PORTUGAL SERVING AS AGENCY
TECHNICAL CO-OPERATION EXPERTS AND
TRAINING COURSE LECTURERS
OR
PARTICIPATING IN CO-ORDINATION MEETINGS
1984 - 1994
(As of mid-August 1994)**

Name	No. of assignments	Project(s)
ALMEIDA VIEIRA ALBERTO	1	POR/1/007
ANDRADE	2	RER/8/003, RER/9/007
BAPTISTA	5	INT/0/047, INT/0/050, INT/0/054, INT/0/055, INT/0/057
BOTELHO SOARES	1	RAS/7/003
CABRAL	1	POR/8/004
CARVALHO	2	INT/9/064, POR/8/002
DA CAMARA MACHADO	1	CUB/5/014
DA SILVA	2	RER/4/008
FALCAO	1	GRE/1/033
GALINHO	1	INT/9/054
GODINHO RODRIGUES	1	RLA/6/009
GOMES LEAL MADUREIRA	4	INT/0/047, INT/0/050, INT/0/055, INT/0/057
GONCALVES	2	INT/9/054, POR/9/005
GUEDELHA	2	INT/0/052, INT/0/054
JARRO	1	POR/9/005
MARGACA	1	INT/8/027
MARQUES DE CARVALHO	5	INT/9/066, POR/9/002, POR/9/005
MENDONCA SANTOS	3	INT/9/054, INT/9/066, POR/9/005
MENEZES	1	POR/4/012
MONGE SOARES	1	POR/8/004
PATRICIO CATELA	2	INT/0/045, POR/2/010

**SCIENTISTS FROM PORTUGAL SERVING AS AGENCY
TECHNICAL CO-OPERATION EXPERTS AND
TRAINING COURSE LECTURERS
OR
PARTICIPATING IN CO-ORDINATION MEETINGS
1984 - 1994
(As of mid-August 1994)**

Name	No. of assignments	Project(s)
RAMALHO CARLOS	1	GRE/4/009
REIS	1	POR/8/002
RORIZ	3	INT/9/066, POR/8/002, POR/9/005
SANTOS	1	PAR/1/002
SOARES	1	RER/4/008
SOUSA	1	INT/9/054
SOUSA LOPES	13	INT/4/070, INT/4/078, INT/4/085, INT/4/093, INT/4/095, INT/4/098, INT/4/101, INT/4/105, INT/4/108, INT/4/112, KEN/4/003, KEN/4/004
TAVARES	4	INT/0/047, INT/0/050, INT/0/055, INT/0/057
TOTAL	65	

**AGENCY FELLOWSHIPS AND SCIENTIFIC VISITS
HOSTED BY PORTUGAL
1984 - 1994
(As of mid-August 1994)**

Recipient country	No. of fellowships	No. of scientific visits	TOTAL ¹
CUBA	1	-	1
EGYPT	-	2	2
IRAN	-	1	1
MOROCCO	-	1	1
PERU	-	2	2
PHILIPPINES	-	1	1
POLAND	1	-	1
SYRIA	1	3	4
UGANDA	-	1	1
TOTAL	3	11	14

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

**REGIONAL AND INTERREGIONAL TRAINING EVENTS
HOSTED BY PORTUGAL
1984 - 1994
(As of mid-August 1994)**

Course No.	Course Title	Partici- pants	Year
INT/0/043 (001)	ITC on Interfacing in Nuclear Experiments	17	1987