



INTERNATIONAL ATOMIC ENERGY AGENCY



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IAEA-CPS-93/08
10 May 1993
Original: ENGLISH

COUNTRY PROGRAMME SUMMARY

THE AGENCY'S TECHNICAL CO-OPERATION

PROGRAMME WITH

ECUADOR

1983 - 1993

COUNTRY PROGRAMME SUMMARIES

DEPARTMENT OF TECHNICAL CO-OPERATION

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ECUADOR

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COUNTRY PROGRAMME SUMMARIES

EVALUATION SECTION

DEPARTMENT OF TECHNICAL CO-OPERATION

**THE AGENCY'S TECHNICAL CO-OPERATION
PROGRAMME WITH
ECUADOR
1983 - 1993
COUNTRY PROGRAMME SUMMARIES**

This report contains a review of the Agency's technical co-operation activities in Ecuador carried out during 1983 - 1993. 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.

ECUADOR

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INTRODUCTION

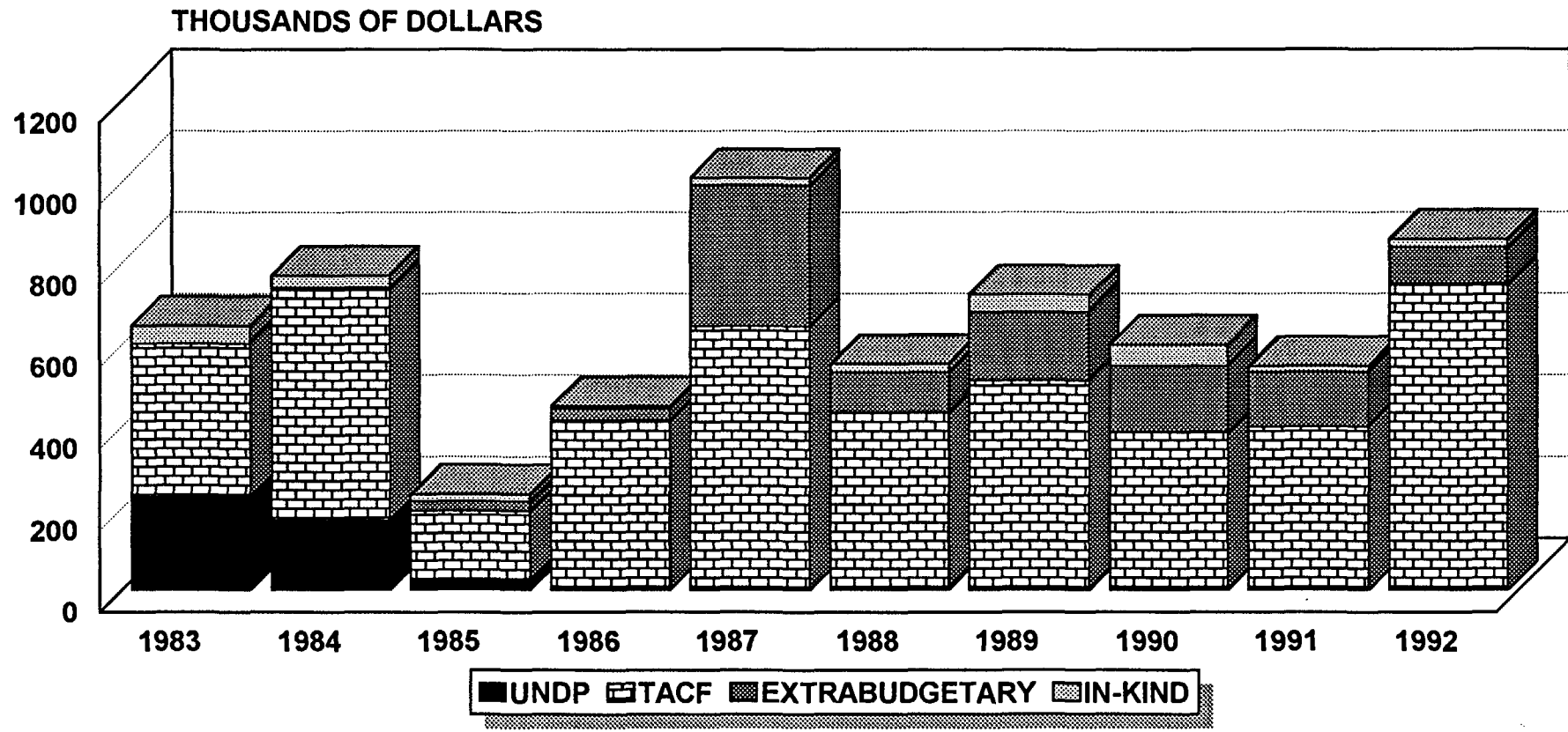
The country programme summary reported on here is one in the series of such studies being undertaken of the Agency's TC programme with Member States. With almost \$8 million of Agency support received, Ecuador ranks 24th among all recipients of technical assistance during the period 1958 through 1992.

More than two-thirds of the assistance received during the past ten years has been provided in the form of equipment (69%), complemented by expert services (17%) and training (14%). The bulk (73%) of the resources was made available through the TACF (of which one-fourth in NCC), the rest was provided through extrabudgetary contributions (17%), through UNDP (6%) and through assistance in kind (4%).

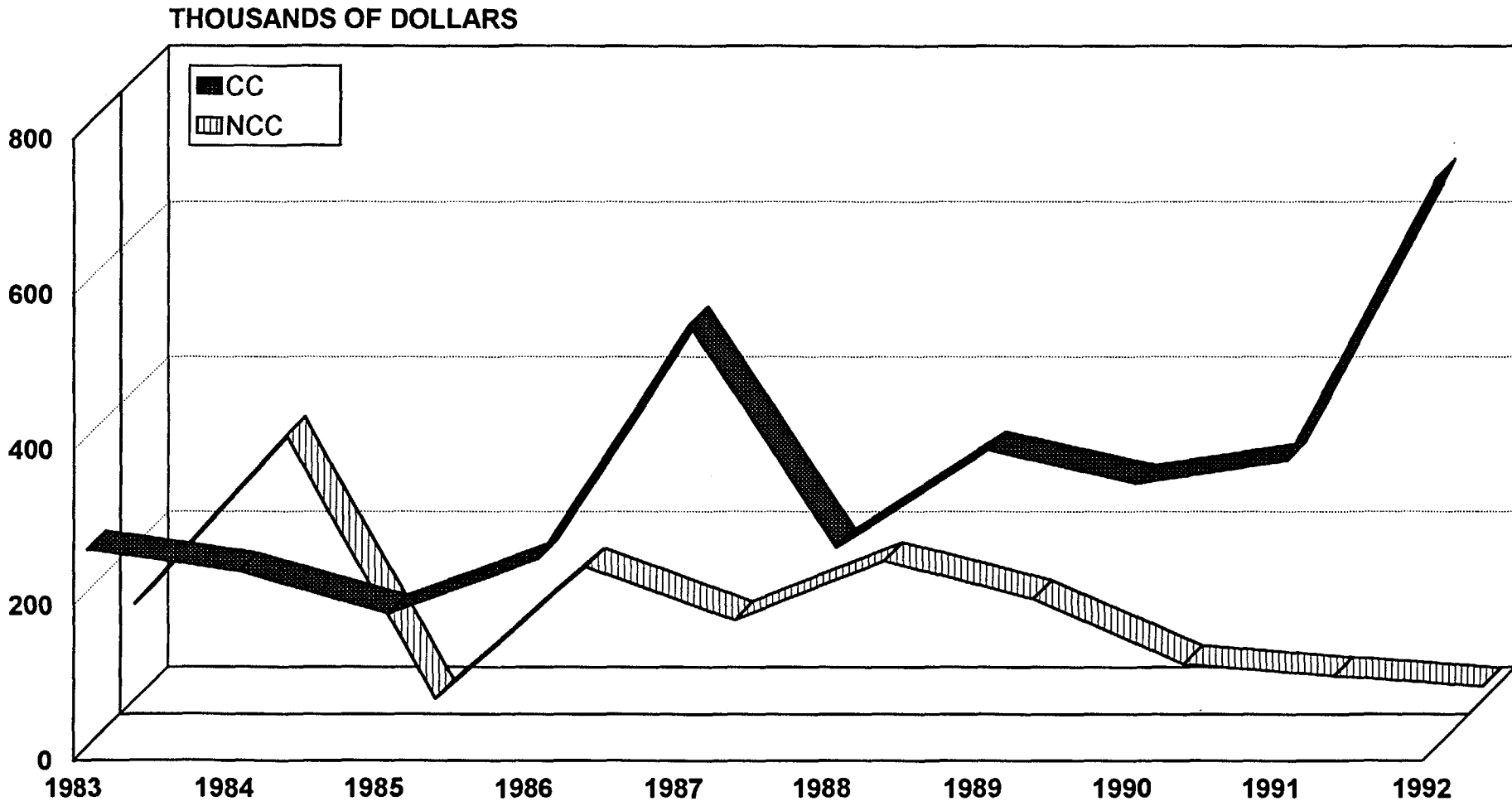
With regard to total disbursements -- by sector -- under those projects that were operational during the period 1983 through 30 April 1993, the three largest areas have been industry and hydrology (28%), agriculture (22%) and nuclear physics and chemistry (21%), followed by nuclear medicine (12%), nuclear raw materials (10%) and nuclear safety (6%).

During the same period, the country has provided experts and training course lecturers for a total of 94 assignments, and has hosted 27 fellowships and scientific visits as well as 13 regional training courses with a total of 141 participants.

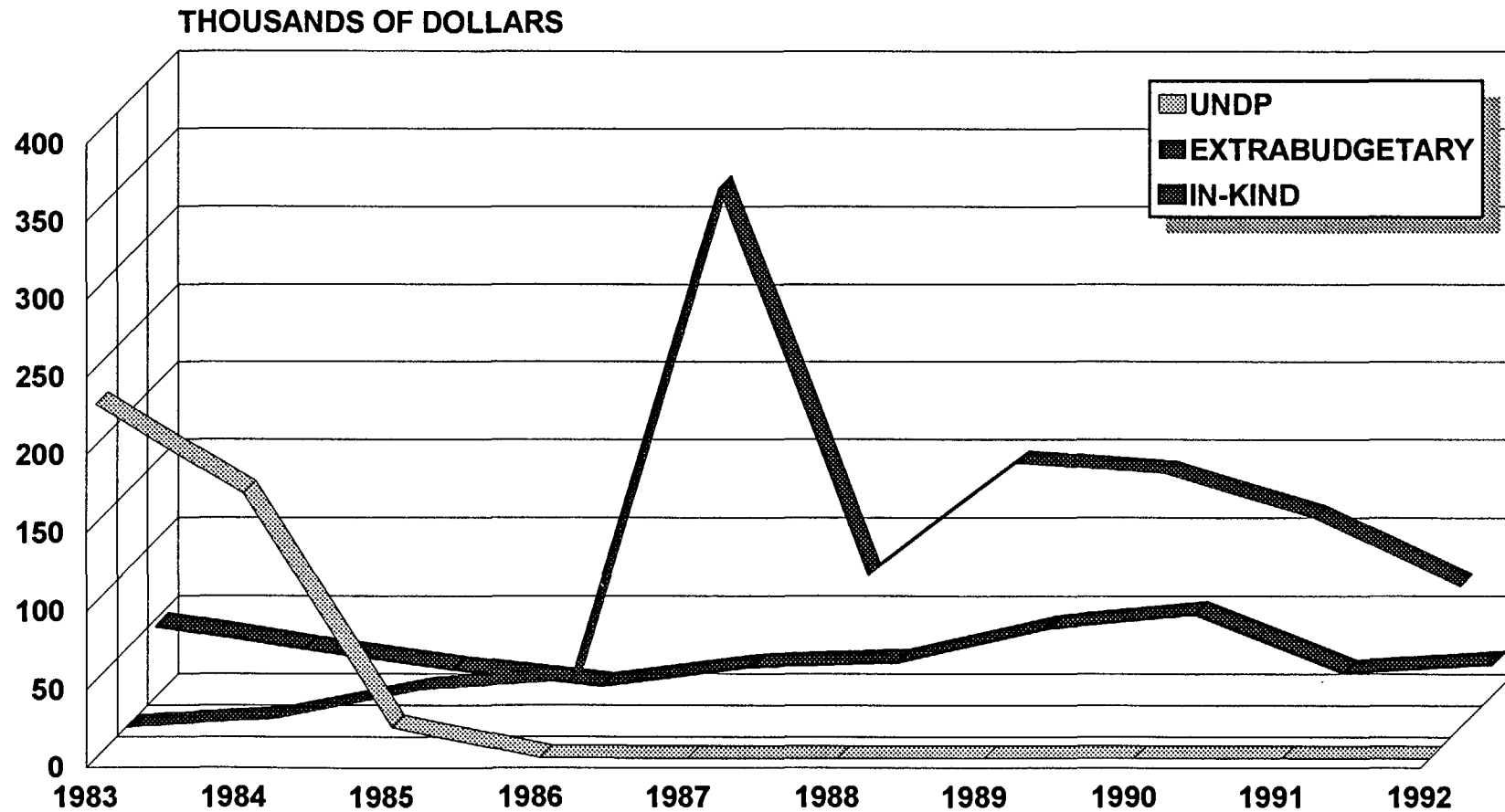
ASSISTANCE PROVIDED BY THE AGENCY TO ECUADOR BY SOURCE (1983 - 1992)



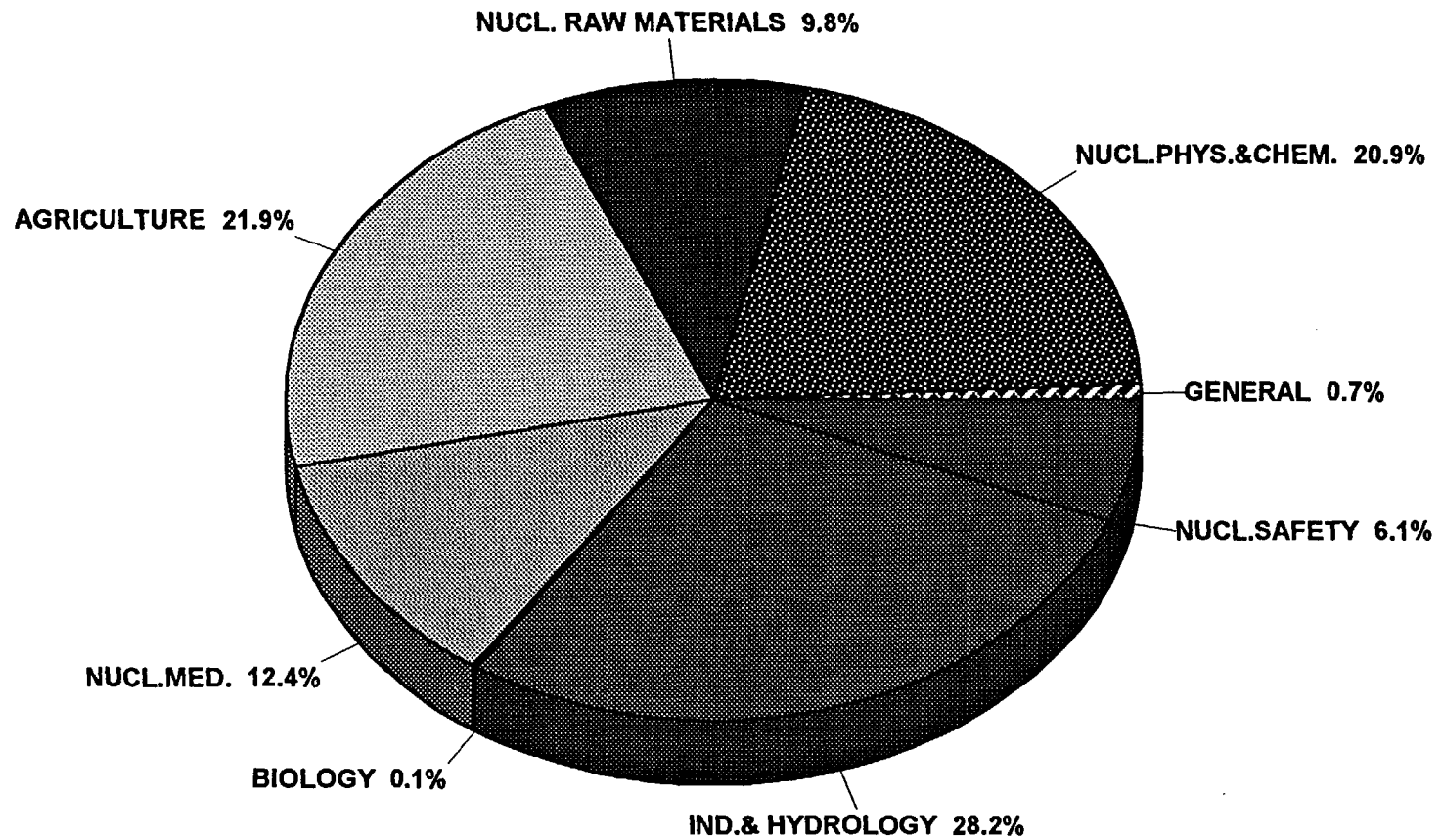
TACF ASSISTANCE PROVIDED TO ECUADOR (1983 - 1992) BY CC AND NCC



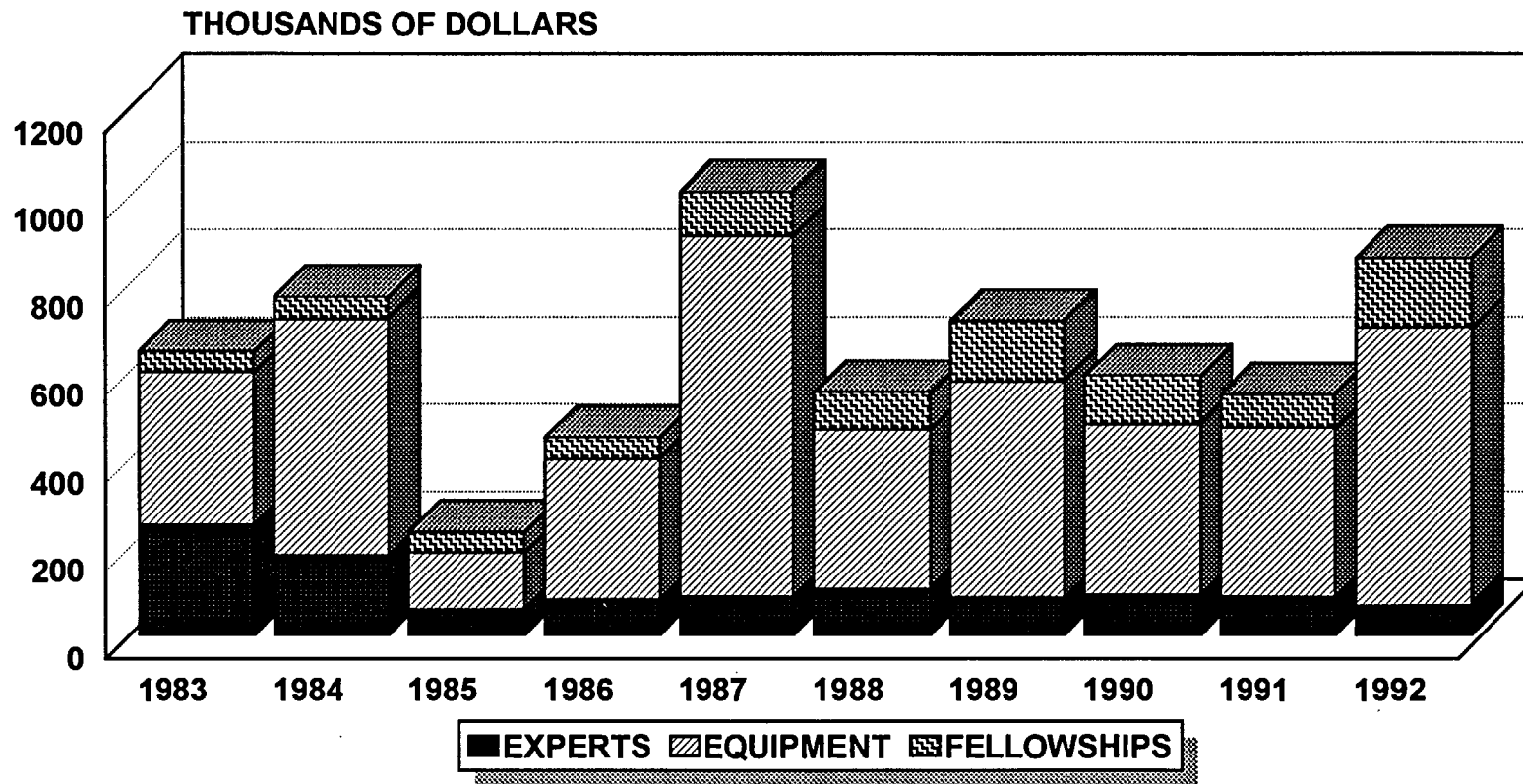
UNDP, EXTRABUDGETARY AND IN-KIND ASSISTANCE PROVIDED TO ECUADOR (1983 - 1992)



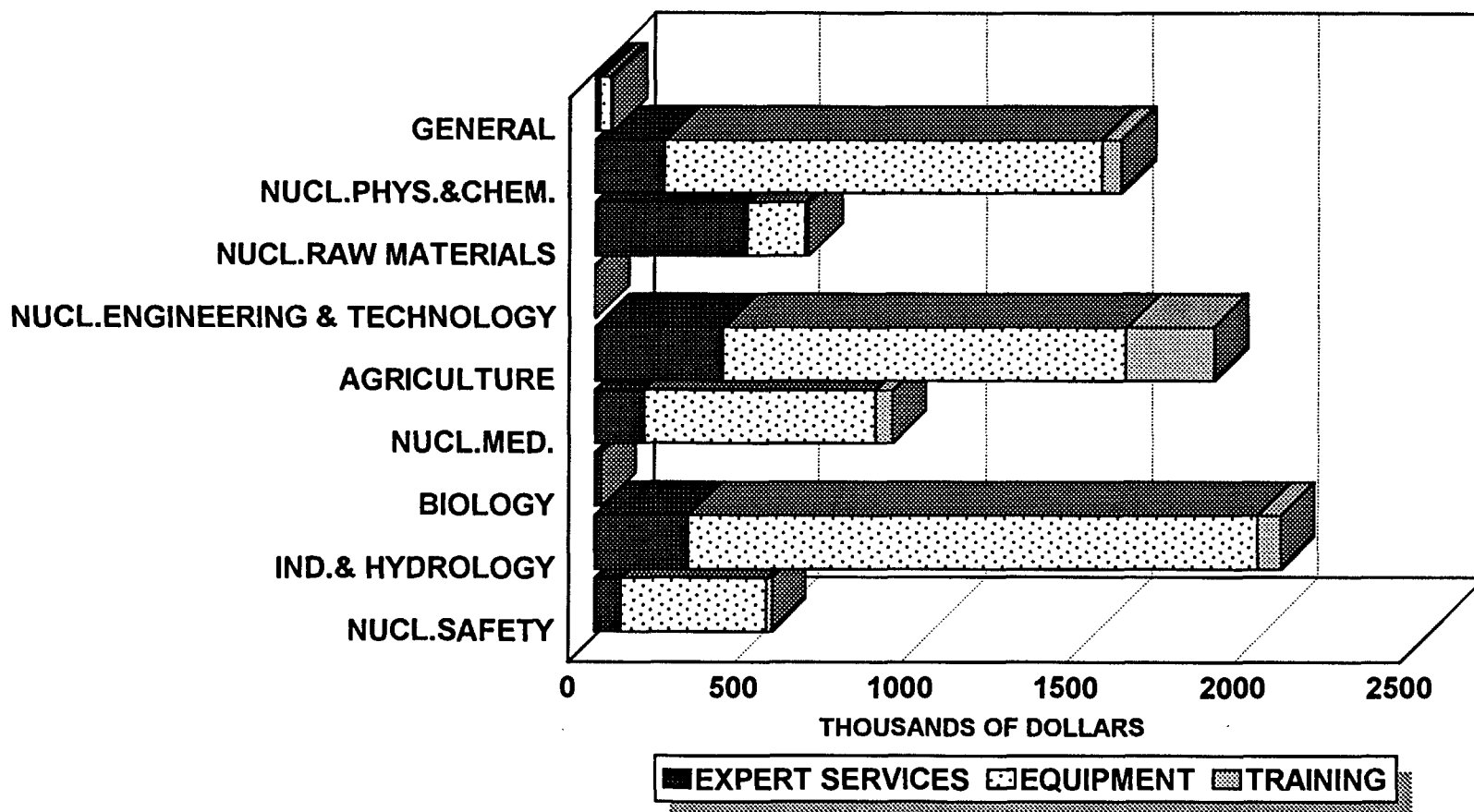
TC PROJECT DISBURSEMENTS IN ECUADOR BY SECTOR (1983 - 1993)



ASSISTANCE PROVIDED BY THE AGENCY TO ECUADOR BY TYPE (1983 - 1992)



EXPERT SERVICES, EQUIPMENT AND PROJECT-FUNDED TRAINING PROVIDED TO ECUADOR BY SECTOR (1983 - 1993)



THE AGENCY'S TECHNICAL CO-OPERATION PROGRAMME WITH ECUADOR
ALL SOURCES

ECUADOR'S RANKING AS A TC RECIPIENT
1958 - 1992
(in \$1000)

YEAR	RANKING	AMOUNT
1958-82	34 th	1554.9
1983	10 th	646.7
1984	7 th	770.4
1985	38 th	233.8
1986	28 th	449.1
1987	9 th	1009.9
1988	15 th	552.4
1989	10 th	723.1
1990	22 nd	599.0
1991	27 th	547.2
1992	10 th	859.6
1958-92	24 th	7946.1

**"TOP FIVE" RECIPIENTS OF AGENCY ASSISTANCE
1958 - 1992 (in \$1000)**

ALL SOURCES

Year	I	II	III	IV	V	ECUADOR
1958-82	BRA 8507.3	IND 6849.4	ARG 5528.2	PAK 5492.7	CHI 5240.1	34 th - 1554.9
1983	EGY 2077.9	PER 1116.8	VIE 948.1	PHI 778.6	IRA 722.1	10 th - 646.7
1984	EGY 3625.9	PER 1750.4	THA 1094.6	CUB 1028.7	PHI 881.2	7 th - 770.4
1985	EGY 2494.8	PER 1120.7	THA 1117.4	BGD 1068.2	PHI 963.7	38 th - 233.8
1986	EGY 2317.0	BRA 1452.9	THA 1169.4	POL 1050.3	BGD 896.4	28 th - 449.1
1987	HUN 3452.6	EGY 1775.4	THA 1742.4	INS 1312.5	YUG 1223.2	9 th - 1009.9
1988	EGY 1486.9	BUL 1361.6	CPR 1278.5	THA 1158.7	BRA 1096.7	15 th - 552.4
1989	CPR 1542.3	EGY 1505.1	THA 1205.3	BRA 1096.5	INS 999.1	10 th - 723.1
1990	POL 2308.1	CPR 2005.0	VIE 1589.2	INS 1412.6	BRA 1229.1	22 nd - 599.0
1991	INS 1305.2	CPR 975.0	EGY 959.8	BRA 951.2	BUL 934.7	27 th - 547.2
1992	EGY 1586.3	INS 1342.1	CPR 1328.8	MEX 1127.8	POL 1036.4	10 th - 859.6
1958-92	EGY 23808.6	BRA 17736.8	THA 15332.0	INS 13725.9	PER 13129.6	24 th - 7946.1

***TOP FIVE* RECIPIENTS OF AGENCY ASSISTANCE
1958 - 1992 (in \$1000)**

TECHNICAL ASSISTANCE AND CO-OPERATION FUND

Year	I	II	III	IV	V	EQUADOR
1958-82	HUN 2971.7	EGY 2405.8	PAK 2340.5	THA 2000.3	BRA 1983.5	30 th - 1006.0
1983	EGY 1049.4	VIE 897.4	POL 667.8	PAK 498.5	PHI 430.0	9 th - 375.8
1984	EGY 1197.2	CUB 655.6	ECU 565.6	BGD 506.3	BUL 472.4	3 rd - 565.6
1985	BGD 991.8	VIE 745.0	THA 708.7	BRA 571.8	POR 538.7	40 th - 172.8
1986	BRA 1381.8	THA 871.9	POL 833.5	BGD 823.9	SYR 751.8	23 rd - 412.2
1987	HUN 3305.2	DRK 986.8	BUL 888.5	INS 885.8	EGY 878.9	15 th - 645.3
1988	BUL 1195.6	PER 856.5	EGY 768.6	INS 751.7	MAL 656.0	14 th - 434.3
1989	EGY 990.9	CPR 868.2	POR 769.6	CHI 756.9	MAL 619.4	13 th - 511.5
1990	POL 1562.3	VIE 1518.8	DRK 1156.2	IRA 958.0	YUG 933.4	28 th - 384.5
1991	BUL 893.1	PAK 868.8	INS 855.1	VIE 817.6	CPR 814.5	29 th - 399.0
1992	EGY 1255.7	CPR 1009.0	VIE 872.8	INS 826.6	IRA 795.5	8 th - 749.3
1958-92	EGY 10847.0	HUN 8743.7	POL 8486.4	VIE 8199.9	PAK 8115.6	17 th - 5656.3

ASSISTANCE PROVIDED BY THE AGENCY TO ECUADOR

Financial Summary 1983 - 1992
(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
1983	251.1	348.1	47.5	-	-	646.7	226.6	252.9	122.9	-	44.3	646.7
1984	181.6	537.7	51.1	-	-	770.4	169.4	225.1	340.5	5.3	29.7	770.4
1985	57.7	128.6	47.5	-	-	233.8	20.1	170.7	2.1	24.1	16.8	233.8
1986	80.4	318.2	50.5	-	-	449.1	0.5	241.3	170.9	30.1	6.3	449.1
1987	86.2	823.4	100.3	-	-	1 009.9	-	542.7	102.6	346.2	18.4	1 009.9
1988	104.4	363.1	84.9	-	-	552.4	-	255.8	178.5	96.9	21.2	552.4
1989	85.2	491.4	138.4	-	8.1	723.1	-	381.4	130.1	168.8	42.8	723.1
1990	91.3	387.5	111.4	-	8.8	599.0	-	338.0	46.5	162.5	52.0	599.0
1991	86.9	383.9	76.4	-	-	547.2	-	367.5	31.5	133.8	14.4	547.2
1992	67.1	633.5	159.0	-	-	859.6	-	731.7	17.6	90.1	20.2	859.6
1983-92	1 091.9	4 415.4	867.0	-	16.9	6 391.2	417.0	3 507.1	1 143.2	1 057.8	266.1	6 391.2

TECHNICAL CO-OPERATION PROJECTS IN ECUADOR
BY SECTOR

PROJECTS COMPLETED AND OPERATIONAL 1983 - 1993

TOTAL PROJECT ALLOTMENTS AND DISBURSEMENTS
(as of 30 April 1993)

SECTOR	NO. OF PROJECTS	ALLOTMENTS \$	% OF TOTAL	DISBURSEMENTS \$	% OF TOTAL
General atomic energy development	1	52 526	0.7	48 987	0.7
Nuclear physics and chemistry	5	1 587 162	20.7	1 386 939	20.9
Nuclear raw materials	2	645 449	8.4	647 909	9.7
Nuclear engineering and technology	-	-	-	-	-
Nuclear techniques in agriculture	12	1 862 937	24.3	1 453 103	21.9
Nuclear medicine	4	897 295	11.7	821 984	12.4
Nuclear techniques in biology	1	20 000	0.3	8 372	0.1
Nuclear techniques in industry and hydrology	8	2 065 627	26.9	1 870 938	28.2
Nuclear safety	5	538 857	7.0	404 485	6.1
TOTAL	38	7 669 853	100.0	6 642 717	100.0

TECHNICAL CO-OPERATION PROJECTS IN ECUADOR
 COMPLETED AND OPERATIONAL, BY SECTOR, 1983 - 1993
 (As of 30 April 1993)

Sector	No. of projects	Total project allotments \$	Total project disbursements \$
<u>Completed projects</u>			
General atomic energy development	1	52 526	48 987
Nuclear physics and chemistry	2	638 565	659 666
Nuclear raw materials	2	645 449	647 909
Nuclear engineering and technology	-	-	-
Nuclear techniques in agriculture	4	721 315	734 080
Nuclear medicine	1	73 500	57 835
Nuclear techniques in biology	-	-	-
Nuclear techniques in industry & hydrology	4	1 399 232	1 391 339
Nuclear safety	3	174 286	172 447
TOTAL	17	3 704 873	3 712 263
<u>Operational projects</u>			
General atomic energy development	-	-	-
Nuclear physics and chemistry	3	948 597	727 273
Nuclear raw materials	-	-	-
Nuclear engineering and technology	-	-	-
Nuclear techniques in agriculture	8	1 141 622	719 023
Nuclear medicine	3	823 795	764 149
Nuclear techniques in biology	1	20 000	8 372
Nuclear techniques in industry & hydrology	4	666 395	479 599
Nuclear safety	2	364 571	232 038
TOTAL	21	3 964 980	2 930 454

**EXPERT SERVICES, EQUIPMENT AND PROJECT-FUNDED TRAINING PROVIDED TO ECUADOR, BY SECTOR
PROJECTS COMPLETED AND OPERATIONAL 1983 - 1993
(As of 30 April 1993)**

FIELD	TOTAL PROJECT ALLOTMENTS				TOTAL PROJECT DISBURSEMENTS			
	EXPERT SERVICES		EQUIPMENT	TRAINING	EXPERT SERVICES		EQUIPMENT	TRAINING
	M/M	\$	\$	\$	M/M	\$	\$	\$
General atomic energy development	1/26	13 290	32 117	7 119	1/26	9 296	31 856	7 835
Nuclear physics and chemistry	32/27	209 575	1 320 886	56 701	28/18	196 368	1 145 370	45 201
Nuclear raw materials	74/14	461 488	174 863	9 098	74/15	463 949	174 862	9 098
Nuclear engineering and technology	-	-	-	-	-	-	-	-
Nuclear techniques in agriculture	50/20	388 000	1 210 885	264 052	40/21	296 150	991 213	165 740
Nuclear medicine	20/00	149 434	697 321	50 540	14/27	95 050	676 009	50 925
Nuclear techniques in biology	0/27	20 000	-	-	0/19	8 372	-	-
Nuclear techniques in industry & hydrology	31/01	285 077	1 710 634	69 916	26/01	234 512	1 568 744	67 682
Nuclear safety	9/19	79 599	442 135	17 123	6/22	62 620	326 243	15 622
TOTAL	221/14	1 606 463	5 588 841	474 549	193/29	1 366 317	4 914 297	362 103

AGENCY FELLOWS FROM ECUADOR

1983 - 1993¹
(As of 30 April 1993)

Sector	No. of fellowships	No. of months/days	Host countries
General atomic energy development	9	8/07	AUS, USA, URU, ARG, BRA, MOC, CUB, USSR, IAEA
Nuclear physics	6	34/06	CHI, FRA, GUA, USA, YUG
Nuclear chemistry	5	14/26	ARG, BRA, MEX, GDR
Nuclear raw materials	12	17/04	COL, USA, PER, BOL, ARG, FRA
Nuclear engineering and technology	5	10/02	COL, AUS, SPA, CHI, DEN, USSR, IAEA
Nuclear techniques in agriculture	28	104/06	PER, BRA, USA, ARG, GER, MEX, GUA, CHI, CAN, PAN, COL, URU, CEC, IAEA
Nuclear medicine	21	86/26	MEX, URU, PER, USA, ARG, ITA, BRA, CUB, SPA, CHI, IAEA
Nuclear techniques in biology	1	3/01	BRA
Nuclear techniques in industry and hydrology	20	50/03	GER, ARG, ITA, SPA, COL, POL, SWE, CAN, AUS, BRA, UK, IAEA
Nuclear safety	16	84/13	ARG, FRA, VEN, BRA, SPA, USA, MEX, IAEA
TOTAL	123	413/04	

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

ECUADOR
LONG-TERM FELLOWSHIPS
1983 - 1993
(As of 30 April 1992)

Name	Field of study	Host country	Date	Duration	Project
RODRIGUEZ PAULA	Nuclear physics	USA	Jan.89 - Jan.90	12/01	ECU/1/004
TIRIRA SAA	Atomic physics	FRA	Apr.87 - Mar.88	12/00	ECU/1/004
BERNAL GOMEZ	Soil/plant relationships	BRA	May 86 - Aug.87	15/02	ECU/5/009
MERINO MONCAYO	Pesticide residues	USA	Jan.87 - Jan.89	24/02	ECU/5/008
CORDERO ORDONEZ	Nuclear medicine	USA	May 84 - Aug.85	15/17	ECU/6/007
LOPEZ JIMENEZ	Nuclear medicine	BRA	Jan.87 - Jan.89	24/03	ECU/6/009
BUITRON SANCHEZ	Radiological health	USA	Jul.88 - Jun.90	22/21	ECU/9/007
MULKI PINEYROS	Environmental monitoring	SPA	Jan.87 - Mar.88	14/02	ECU/9/008

**ECUADORIAN NATIONALS WHO WERE AWARDED MORE THAN ONE
FELLOWSHIP OR SCIENTIFIC VISIT
1983 - 1993
(As of 30 April 1993)**

Name	Field of study	Host country	Date	Duration	Project
ALTAMIRANO BENAVIDES	1. Uranium exploration 2. Surface-water hydrology	COL GER	Nov.83 - Dec.83 May 91 - Jul.91	0/26 2/25	ECU/3/006 RLA/0/014
BASANTES MORALES	1. Soil science 2. Soil science	BRA BRA	Jul.88 - Jan.89 Sep.90 - Dec.90	6/01 3/00	ECU/5/009 ECU/5/012
BUITRON SANCHEZ	1. Radiation protection 2. Radiation protection 3. Radiological health	ARG VEN USA	Sep.83 - Jan.84 Oct.85 - Nov.85 Jul.88 - Jun.90	4/00 0/05 22/21	- RLA/0/006 ECU/9/007
CADENA RUIZ	1. Medical physics 2. Medical physics	USA USA	Aug.86 - Sep.86 Feb.90 - Mar.90	1/00 2/00	ECU/6/008 ECU/6/008
CAMPANA MURGUEITIO	1. Nuclear medicine 2. Nuclear medicine	ARG CHI	Mar.89 - Sep.89 Oct.91	6/01 0/04	RLA/0/011 RLA/0/014
CASTRO COLLANTES	1. Isotope hydrology 2. Research reactors	GER IAEA AUS SPA	Oct.83 Jan.85 - Feb.85	0/12 0/19	- ECU/9/006
GARCIA LINTO	1. Uranium exploration 2. Isotope hydrology 3. Isotope hydrology	PER BOL IAEA COL	Nov.84 - Dec.84 Mar.89 - Jun.89 Mar.90 - May 90	0/19 3/01 1/12	ECU/3/006 - RLA/0/011

ECUADORIAN NATIONALS WHO WERE AWARDED MORE THAN ONE
FELLOWSHIP OR SCIENTIFIC VISIT
1983 - 1993
(As of 30 April 1993)

Name	Field of study	Host country	Date	Duration	Project
GORDILLO PASQUEL	1. Uranium exploration 2. Uranium exploration	COL PER BOL	Nov.83 - Dec.83 Nov.84 - Dec.84	0/26 0/19	ECU/3/006 ECU/3/006
LOAYZA ASTUDILLO	1. Nuclear medicine 2. Nuclear medicine	MEX URU PER ITA IAEA	Oct.83 - Nov.83 Apr.90 - Jun.90	0/15 1/28	- ECU/6/009
MALDONADO CEDENO	1. Non-destructive testing 2. Non-destructive testing	ARG CAN	Aug.87 - Dec.87 Aug.91 - Nov.91	4/01 2/22	RLA/8/005 RLA/8/017
MERINO MONCAYO	1. Pesticide residues 2. Agricultural biochemistry	USA USA	Jan.87 - Jan.89 Aug.91 - Jul.92	24/02 11/02	ECU/5/008 ECU/5/014
MONTENEGRO MENA	1. Non-destructive testing 2. Non-destructive testing	ITA SPA	Nov.86 - Dec.86 Sep.89 - Feb.90	0/19 5/01	RLA/8/006 RLA/0/011
NOVOA	1. Analysis of nuclear raw materials 2. Analytical nuclear physics	ARG USA	Mar.86 - Jun.86 Jan.88 - May 88	3/01 3/22	ECU/3/005 ECU/1/004
OLEAS TORRES	1. Radiopharmaceutical production 2. Production of radiopharmaceuticals	ARG GDR	Sep.83 - Dec.83 May 88 - Jul.88	3/00 1/25	- ECU/2/007
PARRA MOLINA	1. Isotope hydrology 2. Surface water hydrology	IAEA UK	Feb.91 - May 91 Oct.92 - Nov.92	3/04 1/01	ECU/8/012 ECU/8/015

ECUADORIAN NATIONALS WHO WERE AWARDED MORE THAN ONE
FELLOWSHIP OR SCIENTIFIC VISIT
1983 - 1993
(As of 30 April 1993)

Name	Field of study	Host country	Date	Duration	Project
RAMIREZ HIDALGO	1. Multi-purpose irradiators 2. Radiation technology	POL POL SWE	Nov.82 - Aug.83 Jun.90 - Aug.90	9/00 1/08	ECU/8/005 ECU/8/005
RODRIGUEZ PAULA	1. Dosimetry 2. Nuclear physics	IAEA FRA USA	Sep.85 - Mar.86 Jan.89 - Jan.90	6/05 12/01	ECU/1/003 ECU/1/004
TIGRERO SALAS	1. Entomology 2. Entomology	MEX PAN	Jan.90 - Apr.90 Aug.91	2/27 1/00	ECU/5/013 ECU/5/013
VERDESOTO AYMACANA	1. Uranium exploration 2. Uranium exploration	PER BOL FRA	Nov.84 - Dec.84 Oct.86 - May 87	0/19 6/25	ECU/3/006 -
VILLALBA VACA	1. Uranium exploration 2. Uranium exploration 3. Isotope applications in hydrology 4. Surfact water hydrology	COL PER BOL GER UK	Nov.83 - Dec.83 Nov.84 - Dec.84 Jun.90 - Oct.90 Oct.92 - Nov.92	0/26 0/19 4/00 1/01	ECU/3/005 ECU/3/006 RLA/0/011 ECU/8/015

AGENCY TRAINING COURSES WITH ECUADORIAN PARTICIPATION

1983 - 1993
(As of 30 April 1993)

Field	Number of participants	Number of courses
General atomic energy development	10	9
Nuclear physics	6	6
Nuclear chemistry	9	9
Nuclear raw materials	3	3
Nuclear engineering and technology	29	25
Nuclear techniques in agriculture	28	25
Nuclear medicine	7	7
Nuclear techniques in biology	2	2
Nuclear techniques in industry & hydrology	83	79
Nuclear safety	39	33
TOTAL	216	198

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY ECUADORIAN NATIONALS
1983 - 1993
(As of 30 April 1993)**

Name	Course No.	Course title	Year	Location
AGUIRRE	RLA/8/013 (002)	RWS on qualification and certification	1988	BRA
	RLA/8/013 (003)	RWS on preparation of test specimens	1988	BRA
	RLA/8/013 (035)	RTC on NDT in quality assurance	1989	BRA
	RLA/8/013 (061)	RTC on inspection of LPG cylinders	1990	PER
	RLA/8/017 (034)	RWS on quality improvement in metal-mechanical industry by eddy current	1992	CHI
ALMEIDA DOMINGUEZ	INT/3/013 (001)	ITC on uranium prospection and processing	1984	FRA
	INT/9/069 (001)	ITC on radiation protection in the mining and milling of radioactive ores	1986	BRA
ALTAMIRANO BENAVIDES	RLA/1/009 (001)	RTC on the use of isotope techniques in environmental studies of the hydrosphere and atmosphere	1992	BRA
	RLA/8/014 (005)	RTC on the use of environmental isotopes in hydrology	1990	CHI
AVILA ACOSTA	RLA/6/011 (001)	Regional train-the-trainers course on radioisotope methodology with special emphasis on radioimmunoassay	1988	ARG
	RLA/6/011 (019)	RWS on external quality control	1989	PAR
	RLA/6/011 (020)	Second RTC on the preparation and use of regional (local) bulk reagents for RIA	1989	BRA
AYALA AMAYA	RLA/2/003 (011)	RWS on analytical applications of neutron generators and isotopic neutron sources	1991	BOL
	RLA/4/005 (001)	Regional theoretical and practical training course on nuclear reactors for beginners	1984	MEX
BARRAGAN CADENA	RLA/5/021 (003)	Advanced RTC on the use of mutants for different cross-breeding programmes	1989	COS
	RLA/5/021 (007)	Advanced RTC on the use of personal computers for field data analysis	1991	URU
BARRERA VEGA	RLA/8/005 (136)	RTC on ultrasonics in welded joints	1986	BRA
	RLA/8/005 (193)	RTC on eddy currents (level III)	1987	BRA
	RLA/8/006 (001)	RTC on industrial radiography (level III)	1984	COL
BORJA VELA	INT/4/105 (001)	Advanced ITC on nuclear electronics	1988	MEX
	RLA/4/006 (018)	RTC on design and production of printed boards	1991	CUB

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY ECUADORIAN NATIONALS
1983 - 1993
(As of 30 April 1993)**

Name	Course No.	Course title	Year	Location
BUITRON SANCHEZ	INT/9/114 (001) RLA/9/009 (005) RLA/9/009 (006)	ITC on planning, preparedness and response to radiological emergencies RWS on radiation protection RWS to evaluate co-ordinated study on analysis of abnormal exposures occurring from application of industrial radiography	1991 1987 1987	USA PER ARG
CABRERA, A.	RLA/8/013 (006) RLA/8/013 (072)	Regional seminar on NDT in petrochemical industry RWS on underwater inspection	1988 1990	TRI BRA
CIFUENTES ARIAS	RLA/9/009 (004) RLA/9/009 (047) RLA/9/011 (001) RLA/9/011 (003) RLA/9/013 (001)	Regional seminar on radioactive waste management RTC on radiation protection in medical applications of ionizing radiation RTC on radiological emergencies RWS on co-ordinated research work on disposal of medical and industrial radiation sources RTC on management of spent radiation sources	1986 1990 1991 1991 1992	BRA CUB PER COL BRA
ECHEVERRIA TROYA	INT/4/102 (001) RLA/2/003 (001) RLA/8/005 (223)	ITC on interfacing in nuclear experiments RTC on advanced fluorescence analysis Regional informative course on eddy current testing in boiler-tube inspection	1990 1986 1988	THA PAR CHI
EXPINOSA CARRILLO	RLA/8/013 (088) RLA/8/013 (109)	RTC on computers in RT inspection RWS on criteria for conception and management of test pieces for qualification and certification of NDT personnel	1990 1991	MEX CHI
FERNANDEZ GUERRA	RLA/2/004 (001) RLA/4/006 (002) RLA/4/007 (006) RLA/5/020 (003)	RTC on nuclear analytical techniques in the agroindustry and food analysis RWS on design, mounting and maintenance of modular nuclear instrumentation RTC on radioisotope production and processing RTC on general aspects of food irradiation	1988 1986 1989 1988	BRA COL MEX CHI

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY ECUADORIAN NATIONALS
1983 - 1993
(As of 30 April 1993)**

Name	Course No.	Course title	Year	Location
GUDINO AUZ	RLA/4/006 (020)	RWS on application of programmable logic controllers (PLCs) and personal computers	1990	ARG
	RLA/4/006 (021)	RWS on maintenance of gamma cameras	1990	COL
	RLA/4/008 (004)	RTC on repair of multichannel analysers	1991	BRA
	RLA/4/008 (007)	RWS on nuclear instruments in industry and their electronics	1992	CHI
GUEVARA FALCON	INT/1/047 (001)	ITC on experimental nuclear spectroscopy	1990	GRE
	RLA/2/003 (002)	RTC on the application of nuclear analytical techniques for mineral resources	1989	CHI
MALDONADO ASTUDILLO	RLA/8/014 (005)	RTC on the use of environmental isotopes in hydrology	1990	CHI
	RLA/8/014 (006)	Regional II technical co-ordination meeting on the study of resources and contamination of underground water	1991	CUB
MALDONADO CEDENO	RLA/8/013 (024)	RTC on real-time radiography	1989	BRA
	RLA/8/013 (111)	RWS on inspection of LPG cylinders	1991	DOM
	RLA/8/019 (001)	RTC on industrial applications of tracer techniques	1993	MEX
MONTENEGRO MENA	RLA/8/006 (015)	IWS on implementation and implications of ISO international standards	1988	GUA
	RLA/8/006 (017)	Regional co-ordinators meeting at the 13th World Conference on NDT	1992	BRA
	RLA/8/013 (009)	International 12th World Conference on NDT	1989	NET
	RLA/8/013 (010)	IWS on project achievements	1989	GFR
	RLA/8/013 (011)	Regional seminar on NDT advanced techniques	1989	GFR
	RLA/8/013 (012)	Regional seminar on NDT advanced techniques	1989	ITA
	RLA/8/013 (056)	RWS on quality assessment	1990	BRA
	RLA/8/017 (001)	RWS on industrial quality in production and maintenance	1991	BRA
	RLA/8/017 (013)	Regional working group meeting on quality engineering	1992	ARG
	RLA/8/017 (071)	Regional working group on criteria for a survey on quality in the region	1992	BRA
MOREJON CARRERA	INT/9/046 (001)	ITC on radiological protection and nuclear safety	1983	ARG
	RLA/9/009 (047)	RTC on radiation protection in medical applications of ionizing radiation	1990	CUB

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY ECUADORIAN NATIONALS
1983 - 1993
(As of 30 April 1993)**

Name	Course No.	Course title	Year	Location
NARVAEZ CASTILLO	RLA/2/003 (008)	RWS on atomic absorption spectrometry and ICP (induced coupled plasma spectrometry) for analysis of agroindustrial products and food	1990	BRA
	RLA/2/003 (014)	RTC on application of FIA in studies of environmental and geological samples	1992	BRA
OLEAS TORRES	RLA/2/002 (001)	RTC on the production and control of radiopharmaceuticals	1983	URU
	RLA/4/007 (002)	RWS on radioisotope production in reactors, including the technology of radionuclide generators	1986	ARG
ORDONEZ	RLA/8/006 (008)	RTC on surface methods (level III)	1985	BRA
	RLA/8/006 (012)	RTC on radiography (level III)	1986	COL
ORELLANA MOLINA	INT/9/091 (001)	ITC on radiation protection and nuclear safety	1988	ARG
	RLA/9/011 (006)	RTC on establishment of a programme on occupational monitoring	1992	BRA
ORTIZ	RLA/8/005 (086)	Regional train-the-trainers course on magnetic particles	1985	CAN
	RLA/8/005 (144)	Regional seminar on NDT in fracture mechanics	1985	BRA
PACHECO CAMACHO	INT/0/043 (001)	ITC on interfacing in nuclear experiments	1987	POR
	RLA/4/006 (007)	RWS on repair of nuclear instrument module (NIM)	1987	URU
	RLA/4/006 (015)	RWS on local area networks and their application in data transfer in nuclear experiments	1988	URU
PINELA CONTRERAS	RLA/9/011 (006)	RTC on establishment of a programme on occupational monitoring	1992	BRA
	RLA/9/012 (001)	RTC on regulatory aspects and safety documentation of research reactors	1991	CHI
QUINTERO SANJINEZ	INT/9/099 (001)	ITC on management of radioactive wastes with regard to radioisotope applications	1989	GFR
	INT/9/116 (001)	ITC on radiation protection and nuclear safety	1991	ARG
	RLA/9/015 (001)	RTC on safety and regulation of radiation sources	1993	MEX

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY ECUADORIAN NATIONALS
1983 - 1993
(As of 30 April 1993)**

Name	Course No.	Course title	Year	Location
REA PINTO	RLA/4/006 (016)	RTC on maintenance of radiation protection equipment	1989	COL
	RLA/4/006 (022)	RTC on maintenance of power supplies in nuclear instruments	1990	GUA
RIOS BAYAS	RLA/0/009 (001)	RWS on the latest advances in librarianship and information management	1986	MEX
	RLA/0/009 (002)	First RWS on nuclear information	1988	BRA
	RLA/0/010 (001)	RTC for librarians and information specialists in nuclear science and technology	1987	CHI
RIVADENEIRA	RLA/5/021 (001)	RTC on the use of mutation techniques in connection with cereals in in-vitro cultures	1987	PER
	RLA/5/021 (002)	RWS on improvement of rice and other cereals through mutation breeding	1988	COL
	RLA/5/021 (003)	Advanced RTC on the use of mutants for different cross-breeding programmes	1989	COS
	RLA/5/021 (005)	Second RWS on improvement of rice and other cereals in Latin America through mutation breeding	1990	BRA
RODRIGUEZ PAULA	INT/1/036 (001)	Advanced ITC on elemental analysis by nuclear techniques	1985	CPR
	RLA/4/006 (008)	Regional seminar on recent advances in nuclear data acquisition and analysis systems	1987	GUA
	RLA/4/006 (012)	RWS on development of appropriate software for small computers	1988	PAR
ROJAS MOYA	INT/9/050 (001)	ITC on radiological protection and nuclear safety	1984	ARG
	RLA/9/011 (007)	RTC on measurement of environmental samples	1992	ARG
SERRANO VALAREZO	RLA/8/005 (087)	Regional train-the-trainers course on ultrasonics	1985	CAN
	RLA/8/005 (088)	Regional study tour for RWG members	1985	CAN
	RLA/8/005 (115)	V Regional Working Group Meeting	1985	MEX
	RLA/8/005 (116)	VI Regional Working Group Meeting	1985	GUA
	RLA/8/005 (200)	VIII Regional Working Group Meeting	1987	BOL
	RLA/8/005 (232)	IX Regional Working Group Meeting	1988	PER
	RLA/8/005 (233)	Regional II Congress on NDT	1988	PER
	RLA/8/013 (026)	Regional Working Group Meeting	1989	COS
	RLA/8/013 (058)	RWS on radiation protection for radiographers	1990	ARG
	RLA/8/017 (016)	RWS on NDT for quality	1992	CHI

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY ECUADORIAN NATIONALS
1983 - 1993
(As of 30 April 1993)**

Name	Course No.	Course title	Year	Location
SERRANO, J.	RLA/8/005 (192)	Regional seminar on NDT of vibrations	1987	ARG
	RLA/8/005 (237)	National informative study tour on vibrations	1988	GFR
TUMIPAMBA	RLA/8/005 (078)	RTC on ultrasonics (level II)	1985	PER
	RLA/8/006 (016)	Regional informative course on thermography	1988	VEN
	RLA/8/013 (023)	RTC on eddy currents in ferromagnetic materials	1989	CHI
USBECK WANDEMBERG	INT/1/037 (001)	ITC on advanced data processing and interpretation in X-ray fluorescence analysis	1985	YUG
	INT/4/093 (001)	ITC on advanced nuclear electronics	1987	JAM
VEGA CUESTA	INT/9/045 (001)	ITC for radiation protection officers in regulatory bodies	1984	GDR
	RLA/2/005 (001)	Regional theoretical and practical training course on nuclear reactors for beginners	1989	MEX
	RLA/7/005 (001)	RTC on strategies and methodologies for applied marine radioactivity studies	1992	MEX
	RLA/9/009 (001)	RWS on radiation protection	1986	CHI
	RLA/9/009 (010)	Fourth RWS on radiation protection	1988	COL
RLA/9/009 (042)	Fifth RWS on radiation protection	1989	BRA	
VILLACRES CARRILLO	RLA/8/005 (085)	RTC on ultrasonics (level III)	1985	COL
	RLA/8/013 (018)	RTC on acoustic emission	1989	ARG
	RLA/8/013 (079)	RTC on eddy currents (level III - tubes)	1990	PER
VILLALBA VACA	INT/3/011 (001)	ITC on uranium prospection	1983	YUG
	RLA/8/015 (001)	RTC on use of tracers to study contaminant dispersion in surface waters	1991	ARG
ZURITA MANTILLA	RLA/5/019 (002)	RTC on food irradiation technology	1990	ARG
	RLA/5/022 (001)	RTC on immunoassay methods and labelled DNA probes in animal disease diagnosis	1988	ARG
	RLA/5/028 (002)	RTC on animal health	1992	COL

PROJECTS COMPLETED IN ECUADOR SINCE 1983
(As of 30 April 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1987	ECU/0/004	Nuclear information services	1/26	13 290	32 117	7 119	1/26	9 296	31 856	7 835	1991
1980	ECU/1/003	Secondary standards dosimetry laboratory	18/00	94 000	237 700	-	17/08	115 243	239 134	-	1986
1984	ECU/1/004	Applied nuclear physics	5/23	39 285	240 434	27 146	5/23	36 906	241 004	27 379	1992
1981	ECU/3/005	Uranium prospection ¹	18/05	99 800	35 174	-	18/06	102 261	35 173	-	1988
1982	ECU/3/006	Uranium prospection	56/09	361 688	139 689	9 098	56/09	361 688	139 689	9 098	1985
1982	ECU/5/006	Nuclear techniques in animal health and production	12/08	66 560	47 400	-	12/07	68 480	47 702	-	1987
1983	ECU/5/007	Nuclear techniques in animal health and production	3/28	26 395	40 814	-	3/28	26 395	40 814	-	1989
1985	ECU/5/008	Agricultural chemicals and residues	6/23	47 445	196 330	60 604	6/23	49 708	196 570	62 111	1991

¹ Figures for equipment include \$20 000 offered and provided in kind by Spain.

PROJECTS COMPLETED IN ECUADOR SINCE 1983
(As of 30 April 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1985	ECU/5/009	Nuclear techniques in agriculture	4/15	31 275	186 371	18 121	4/18	37 441	186 738	18 121	1988
1982	ECU/6/007	Nuclear medicine	5/00	27 800	45 700	-	4/15	21 088	36 747	-	1984
1980	ECU/8/005	Radiation technology	13/02	86 460	1 166 993	3 613	13/01	85 192	1 164 951	3 111	1991
1983	ECU/8/007	Industr. radiography	3/00	18 600	47 000	-	3/00	12 669	47 346	-	1985
1987	ECU/8/009	Isotope hydrology	0/18	6 250	-	-	0/25	7 754	-	-	1987
1988	ECU/8/011	Industrial applications ²	-	16 952	53 364	-	-	16 952	53 364	-	1992
1982	ECU/9/006	Nuclear safety mission	2/00	10 800	-	-	1/10	9 861	-	-	1985
1984	ECU/9/007	Radiological safety inspection	1/00	6 900	101 951	-	1/00	6 134	101 733	-	1987
1986	ECU/9/008	Environmental radio-activity monitoring	0/19	6 699	47 936	-	1/00	6 699	48 020	-	1991
	TOTAL	17 projects	152/26	960 199	2 618 973	125 701	151/19	973 767	2 610 841	127 655	

² Expert services sub-contracted.

OPERATIONAL PROJECTS IN ECUADOR
(As of 30 April 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS			
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING
			M/M	\$	\$	\$	M/M	\$	\$	\$
1993	ECU/1/006	Modernizing of secondary standards laboratory	2/00	21 150	120 000	9 450	-	-	-	-
1985	ECU/2/007	Radiopharmaceutical production	4/27	38 270	530 432	20 105	3/27	33 143	485 456	17 822
1989	ECU/2/008	Nuclear analytical techniques (phase II)	2/07	16 870	192 320	-	1/20	11 076	179 776	-
1987	ECU/5/010	Mutation breeding	3/22	29 580	198 901	23 631	3/29	35 238	198 737	23 631
1988	ECU/5/011	Improvement of livestock productivity	2/23	23 610	87 399	9 691	2/09	23 153	89 615	8 604
1988	ECU/5/012	Nuclear techniques in agriculture (phase II)	2/17	21 715	124 864	7 396	2/17	22 707	125 261	7 396
1989	ECU/5/013	Control of the fruit fly	3/24	31 070	40 829	12 269	3/24	26 119	41 850	12 269
1991	ECU/5/014	Bound pesticide residues and slow-release formulations	2/10	24 100	104 977	56 890	0/09	5 428	50 905	33 608
1993	ECU/5/016	Increasing genetic variability through induced mutations	3/00	31 950	40 000	-	-	-	-	-

OPERATIONAL PROJECTS IN ECUADOR
(As of 30 April 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS			
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING
			M/M	\$	\$	\$	M/M	\$	\$	\$
1993	ECU/5/017	Use of immunoassay techniques in animal diagnosis	3/00	32 550	45 000	18 600	0/07	1 481	-	-
1993	ECU/5/018	Efficiency in the use of water and fertilizer	2/00	21 750	98 000	56 850	-	-	13 021	-
1984	ECU/6/008	Advanced training in medical physics	10/09	90 784	69 000	13 000	5/16	44 666	65 746	12 201
1985	ECU/6/009	Nuclear medicine services	4/21	30 850	379 426	37 540	4/26	29 296	373 322	38 724
1990	ECU/6/010	Intracavitary radiotherapy	-	-	203 195	-	-	-	200 194	-
1992	ECU/7/004	Application of nuclear techniques in environmental studies	0/27	20 000	-	-	0/19	8 372	-	-
1989	ECU/8/012	Isotope applications in hydrology	4/06	43 800	97 500	23 136	3/16	40 263	96 969	21 564
1991	ECU/8/013	Carbon-14 laboratory	2/15	25 725	121 277	23 324	1/04	13 487	80 211	18 544
1991	ECU/8/014	Radiation technology (phase II)	4/20	49 190	173 500	10 843	3/28	43 895	87 691	9 317
1991	ECU/8/015	Study of sedimentation using nuclear techniques	3/00	38 100	51 000	9 000	0/17	14 300	38 212	15 146

**OPERATIONAL PROJECTS IN ECUADOR
(As of 30 April 1993)**

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS			
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING
			M/M	\$	\$	\$	M/M	\$	\$	\$
1988	ECU/9/010	Radiological safety inspection (phase II)	3/00	23 700	176 830	17 123	3/03	34 936	176 490	15 622
1993	ECU/9/011	Radiation protection (phase III)	3/00	31 500	115 418	-	0/09	4 990	-	-
	TOTAL	21 projects	68/18	646 264	2 969 868	348 848	42/10	392 550	2 303 456	234 448

Footnote-a/ projects not yet upgraded:

ECU/1/005 Archaeological dating using thermoluminescence
 ECU/8/016 Analysis and control of vibrations
 ECU/9/009 Natural background radiation

COUNTERPART INSTITUTIONS IN ECUADOR (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>GENERAL ATOMIC ENERGY DEVELOPMENT</u>		
ECU/0/004	Ecuadorian Atomic Energy Commission, Quito	MOLINEROS ANDRADE
<u>NUCLEAR PHYSICS AND CHEMISTRY</u>		
ECU/1/003	Ecuadorian Atomic Energy Commission, Quito	GARZON QUIROZ
ECU/1/004	Ecuadorian Atomic Energy Commission, Quito	ECHEVERRIA TROYA
ECU/1/006	Ecuadorian Atomic Energy Commission, Quito	MUNOZ MUNOZ
ECU/2/007	Ecuadorian Atomic Energy Commission, Quito	FERNANDEZ GUERRA VACA ABROLEDA
ECU/2/008	Ecuadorian Atomic Energy Commission, Quito	ECHEVERRIA TROYA
<u>NUCLEAR RAW MATERIALS</u>		
ECU/3/005	Ecuadorian Atomic Energy Commission, Quito	ALMEIDA VILLALBA VACA
ECU/3/006	Ecuadorian Atomic Energy Commission, Quito	GARZON QUIROZ
<u>AGRICULTURE</u>		
ECU/5/006	Ecuadorian Atomic Energy Commission, Quito	JARRIN MALDONADO MOLINEROS ANDRADE
ECU/5/007	Ecuadorian Atomic Energy Commission, Quito	VILLALBA BARRERA
ECU/5/008	1. Ecuadorian Atomic Energy Commission, Quito 2. Ministry of Agriculture and Livestock, Tumbaco Laboratory, Quito	MOLINEROS ANDRADE MERINO MONCAYO BOLANOS DE MORENO

COUNTERPART INSTITUTIONS IN ECUADOR (I)

(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>AGRICULTURE (cont'd)</u>		
ECU/5/009	Ecuadorian Atomic Energy Commission, Quito	CALVACHE ULLOA GARCIA
ECU/5/010	1. Ecuadorian Atomic Energy Commission, Quito 2. Agriculture and Livestock Research Institute, Santa Catalina Experimental Research Station, Quito	BARRAGAN CADENA -
ECU/5/011	1. Ecuadorian Atomic Energy Commission, Quito 2. Central University, Faculty of Veterinary Medicine and Zootechnics, Quito	VILALBA BARRERA HERNANDEZ
ECU/5/012	Ecuadorian Atomic Energy Commission, Quito	BARRAGAN CADENA
ECU/5/013	1. Ecuadorian Atomic Energy Commission, Quito 2. Ministry of Agriculture and Livestock, Tumbaco Laboratory, Quito	MOLINEROS ANDRADE DONOSO LOPEZ
ECU/5/014	Ecuadorian Atomic Energy Commission, Quito	MERINO MONCAYO
ECU/5/016	Ecuadorian Atomic Energy Commission, Research Division, Quito	BARRAGAN CADENA
ECU/5/017	Ministry of Health, Animal Health Laboratory, Quito	BURBANO
ECU/5/018	Ecuadorian Atomic Energy Commission, Quito	BASANTES MORALES CALVACHE ULLOA

COUNTERPART INSTITUTIONS IN ECUADOR (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR MEDICINE</u>		
ECU/6/007	1. Ministry of Health, Quito	ANDRADE
	2. Ecuadorian Atomic Energy Commission, Quito	-
ECU/6/008	1. Pontifical Catholic University of Ecuador, Quito	RODRIGUEZ PAULA CADENA RUIZ
	2. Ecuadorian Atomic Energy Commission, Quito	BRAVO SALVADOR
ECU/6/009	Ecuadorian Institute of Social Security, Carlos Andrade Marin Hospital Quito	LOAYZA ASTUDILLO
ECU/6/010	SOLCA Cancer Institute, Quito	TERAN ALVARADO
<u>NUCLEAR TECHNIQUES IN BIOLOGY</u>		
ECU/7/004	1. Ecuadorian Atomic Energy Commission, Quito	PENAHERRERA SANCHEZ
	2. Sociedad de Ingenieros del Ecuador, Quito	MUNOZ RIBADENEIRA
<u>NUCLEAR TECHNIQUES IN INDUSTRY AND HYDROLOGY</u>		
ECU/8/005	National Polytechnic School, Nuclear Science Institute, Quito	RAMIREZ HIDALGO
ECU/8/007	Higher Polytechnic School of the Coast, Guayaquil	SERRANO VALAREZO
ECU/8/009	1. Ecuadorian Atomic Energy Commission, Quito	MACKLIFF EGUEZ QUEVEDO
	2. Ecuadorian Institute of Energy, Quito	-
	3. Ecuadorian Institute of Hydraulic Resources, Quito	-
ECU/8/011	Ecuadorian Atomic Energy Commission, Quito	MONTENEGRO MENA

COUNTERPART INSTITUTIONS IN ECUADOR (I)

(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR TECHNIQUES IN INDUSTRY AND HYDROLOGY (cont'd)</u>		
ECU/8/012	1. Ecuadorian Atomic Energy Commission, Quito	ALMEIDA DOMINGUEZ VILLALBA VACA
	2. Ecuadorian Institute of Hydraulic Resources, Quito	-
ECU/8/013	Ecuadorian Atomic Energy Commission, Quito	ALMEIDA DOMINGUEZ
ECU/8/014	1. National Polytechnic School, Quito	RAMIREZ TRAJANO
	2. Ecuadorian Atomic Energy Commission, Quito	FERNANDEZ GUERRA
ECU/8/015	Ecuadorian Atomic Energy Commission, Quito	ALMEIDA DOMINGUEZ
<u>NUCLEAR SAFETY</u>		
ECU/9/006	Ecuadorian Atomic Energy Commission, Quito	CASTRO COLLANTES
ECU/9/007	Ecuadorian Atomic Energy Commission, Quito	PENAHERRERA SANCHEZ BUTTRON SANCHEZ
ECU/9/008	Ecuadorian Atomic Energy Commission, Quito	BRAVO SALVADOR
ECU/9/010	Ecuadorian Atomic Energy Commission, Quito	BRAVO SALVADOR CAMPANA MURGUEITIO
ECU/9/011	Ecuadorian Atomic Energy Commission, Division of Radiation Safety, Quito	CIFUENTES ARIAS

COUNTERPART INSTITUTIONS IN ECUADOR (II)

(By Institute)

QUITO

Ecuadorian Atomic Energy Commission

Quito

ECU/0/004	Nuclear Information Services
ECU/1/003	Secondary Standards Dosimetry Laboratory
ECU/1/004	Applied Nuclear Physics
ECU/1/006	Modernization of Secondary Standards Laboratory
ECU/2/007	Radiopharmaceutical Production
ECU/2/008	Nuclear Analytical Techniques (Phase II)
ECU/3/005	Uranium Prospection
ECU/3/006	Uranium Prospection
ECU/5/006	Nuclear Techniques in Animal Health and Production
ECU/5/007	Nuclear Techniques in Animal Health and Production
ECU/5/008	Agricultural Chemicals and Residues
ECU/5/009	Nuclear Techniques in Agriculture
ECU/5/010	Mutation Breeding
ECU/5/011	Improvement of Livestock Productivity
ECU/5/012	Nuclear Techniques in Agriculture (Phase II)
ECU/5/013	Control of the Fruit Fly
ECU/5/014	Bound Pesticide residues and Slow-Release Formulations
ECU/5/018	Efficiency in the Use of Water and Fertilizer
ECU/6/007	Nuclear Medicine
ECU/6/008	Advanced Training in Medical Physics
ECU/7/004	Application of Nuclear Techniques in Environmental Studies
ECU/8/009	Isotope Hydrology
ECU/8/011	Industrial Applications
ECU/8/012	Isotope Applications in Hydrology
ECU/8/013	Carbon-14 Laboratory
ECU/8/014	Radiation Technology (Phase II)
ECU/8/015	Study of Sedimentation Using Nuclear Techniques
ECU/9/006	Nuclear Safety Mission
ECU/9/007	Radiological Safety Inspection
ECU/9/008	Environmental Radioactivity Monitoring
ECU/9/010	Radiological Safety Inspection (Phase II)

Ecuadorian Atomic Energy Commission

Research Division

Quito

ECU/5/016	Increasing Genetic Variability Through Induced Mutations
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COUNTERPART INSTITUTIONS IN ECUADOR (II)
(By Institute)

QUITO (cont'd)

Ecuadorian Atomic Energy Commission
Division of Radiation Safety
Quito

ECU/9/011 Radiation Protection (Phase III)

Ministry of Agriculture and Livestock
Tumbaco Laboratory
Quito

ECU/5/008 Agricultural Chemicals and Residues
ECU/5/013 Control of the Fruit Fly

Agriculture and Livestock Research Institute
Santa Catalina Experimental Research Station
Quito

ECU/5/010 Mutation Breeding

Central University
Faculty of Veterinary Medicine and Zootechnics
Quito

ECU/5/011 Improvement of Livestock Productivity

Ministry of Health
Quito

ECU/6/007 Nuclear Medicine

Ministry of Health
Animal Health Laboratory
Quito

ECU/5/017 Use of Immunoassay Techniques in Animal Diagnosis

Pontifical Catholic University of Ecuador
Quito

ECU/6/008 Advanced Training in Medical Physics

COUNTERPART INSTITUTIONS IN ECUADOR (II)
(By Institute)

QUITO (cont'd)

National Polytechnic School
Quito

ECU/8/014 Radiation Technology (Phase II)

National Polytechnic School
Nuclear Science Institute
Quito

ECU/8/005 Radiation Technology

Ecuadorian Institute of Social Security
Carlos Andrade Marin Hospital
Quito

ECU/6/009 Nuclear Medicine Services

SOLCA Cancer Institute
Quito

ECU/6/010 Intracavitary Radiotherapy

Sociedad de Ingenieros del Ecuador
Quito

ECU/7/004 Application of Nuclear Techniques in Environmental Studies

Ecuadorian Institute of Energy
Quito

ECU/8/009 Isotope Hydrology

Ecuadorian Institute of Hydraulic Resources
Quito

ECU/8/009 Isotope Hydrology
ECU/8/012 Isotope Applications in Hydrology

COUNTERPART INSTITUTIONS IN ECUADOR (II)
(By Institute)

GUAYAQUIL

Higher Polytechnic School of the Coast
Guayaquil

ECU/8/007 Industrial Radiography

THE AGENCY'S TECHNICAL CO-OPERATION PROGRAMME WITH ECUADOR

LONG-TERM ASSIGNMENTS (1983 - 1993)

Project ECU/3/006 Uranium Prospection

- Task 01 - Chief Technical Adviser
V.G.L. BANICZKY (CAN) Jan 82 - Dec 84 36 months
- Task 02 - Geochemist
J.A. BLASCHECK (UK) Jun 83 - Oct 84 15.4 months
- Local Administrative Staff
M. GUERRA May 82 - May 83 12.1 months

Project ECU/5/006 Nuclear Techniques in Animal Health and Production

- Task 01 - Control of Helminth Infection
G.D. GRAY (UK) Mar 83 - Mar 84 12 months

RESEARCH CONTRACTS/AGREEMENTS IN ECUADOR SINCE 1983 ^{1/}
(As of 30 April 1993)

Field of activity	No. of contracts/ agreements	Amount allocated \$
Nuclear chemistry	1	4 000
Nuclear engineering and technology	1	3 000
Nuclear techniques in agriculture	13	134 300
Nuclear medicine	2	16 000
Nuclear techniques in biology	1	8 000
Nuclear techniques in industry & hydrology	3	46 000
Safety in nuclear energy	1	^{2/}
TOTAL	22	211 300

^{1/} New awards since 1983

^{2/} Cost-free

**SCIENTISTS FROM ECUADOR SERVING AS AGENCY
TECHNICAL CO-OPERATION EXPERTS OR
TRAINING COURSE LECTURERS
1983 - 1993
(As of 30 April 1993)**

Name	No. of assignments	Project(s)
ANDRADE DELGADO	1	RLA/0/009
BASANTES MORALES	1	ECU/5/009
BRAVO SALVADOR	1	RLA/9/009
BUITRON SANCHEZ	1	RLA/9/011
CALVACHE ULLOA	13	BOL/5/004, CHI/5/014, COL/5/010, ECU/5/009, GUA/5/009, NIC/5/003, VEN/5/009
CAMACHO	1	RLA/8/005
CASTRO COLLANTES	1	RLA/8/006
CIFUENTES ARIAS	1	RLA/9/009
DE GONZALEZ	1	COL/3/004
DE LA CRUZ DOMINGUEZ	3	ECU/1/003, INT/4/054, RLA/0/006
ECHEVERRIA TROYA	1	RLA/4/008
ERAZO ALVAREZ	1	RLA/8/005
ESPINOSA	1	RLA/8/005
GARZON QUIROZ	4	INT/9/055, RLA/0/006, RLA/6/006
GUERRA	1	ECU/3/006
MACKLIFF EGUEZ	3	RLA/0/006
MALDONADO ASTUDILLO	1	RLA/8/014
MALDONADO CEDENO	2	RLA/0/006, RLA/8/013
MOLINEROS ANDRADE	1	RLA/0/009
MONTENEGRO MENA	5	RLA/8/005, RLA/8/006, RLA/8/013
MONTOYA	1	RLA/4/009
MOREJON CARRERA	1	RLA/9/011
MORENO	1	ECU/3/006

**SCIENTISTS FROM ECUADOR SERVING AS AGENCY
TECHNICAL CO-OPERATION EXPERTS OR
TRAINING COURSE LECTURERS
1983 - 1993
(As of 30 April 1993)**

Name	No. of assignments	Project(s)
MUNOZ BURGOS	1	RLA/8/016
ORTIZ	1	RLA/8/005
PASTOR	1	RLA/8/005
PENAHERRERA SANCHEZ	4	ELS/0/004, INT/9/055, RLA/0/006
RAMIREZ HIDALGO	3	ECU/8/005, ECU/8/014
RIOS BAYAS	1	RLA/0/009
RIVERO	1	RLA/4/009
SAMANIEGO VITERI	1	RLA/2/003
SANCHEZ CEVALLOS	1	RLA/8/005
SANCHEZ MORILLO	1	RLA/8/005
SERRANO VALAREZO	25	INT/8/025, RLA/8/005, RLA/8/006, RLA/8/013, RLA/8/017
URRESTA AYALA	3	RLA/6/011
USBECK WANDEMBERG	2	INT/4/054, RLA/4/006
VILLACRES CARRILLO	2	RLA/8/005
TOTAL	94	

**AGENCY FELLOWSHIPS AND SCIENTIFIC VISITS
HOSTED BY ECUADOR
1983 - 1993
(As of 30 April 1993)**

Recipient country	No. of fellowships	No. of scientific visits	TOTAL ¹
BOLIVIA	1	4	5
CHILE	2	1	3
COLOMBIA	1	5	6
CUBA	1	-	1
EL SALVADOR	1	-	1
GUATEMALA	-	1	1
PARAGUAY	-	1	1
PERU	-	4	4
URUGUAY	-	2	2
VENEZUELA	-	3	3
TOTAL	6	21	27

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

**REGIONAL AND INTERREGIONAL TRAINING EVENTS
HOSTED BY ECUADOR
1983 - 1993
(As of 30 April 1993)**

Course No.	Course Title	Partici- pants	Year
RLA/0/009 (006)	Third RWS on nuclear information	11	1991
RLA/1/003 (001)	RTC on radiochemistry and nuclear analytical techniques	16	1984
RLA/2/006 (001)	First RWS on environmental studies using nuclear techniques	4	1992
RLA/4/006 (014)	RWS on design and construction of an X-ray spectrometer	3	1988
RLA/4/008 (005)	RTC on application of transducers to nuclear instrumentation	10	1992
RLA/8/005 (084)	RTC on NDT in radiography (level II)	13	1985
RLA/8/005 (110)	RTC on NDT in aircraft maintenance	12	1985
RLA/8/005 (194)	Regional seminar on high-energy RT	12	1987
RLA/8/016 (001)	RTC on safe operation of radiation facilities - regulatory responsibilities	13	1992
RLA/8/017 (002)	RWS on ISO criteria for a survey on quality control in the region	15	1991
RLA/9/009 (002)	RWS on calibration procedures in dosimetry	11	1986
RLA/9/009 (045)	RTC on radiation protection in radiodiagnosis	9	1990
RLA/9/011 (004)	RTC on TLD applied to dosimetry	12	1991
	TOTAL	141	