



INTERNATIONAL ATOMIC ENERGY AGENCY



XA9743876

IAEA-CPS-93/17
2 November 1993
Original: ENGLISH

COUNTRY PROGRAMME SUMMARY

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

DEPARTMENT OF TECHNICAL CO-OPERATION

IAEA-CPS-93/17
2 November 1993
Original: ENGLISH

COUNTRY PROGRAMME SUMMARY

THE AGENCY'S TECHNICAL CO-OPERATION
PROGRAMME WITH
JORDAN

1983 - 1993

COUNTRY PROGRAMME SUMMARIES

EVALUATION SECTION
DEPARTMENT OF TECHNICAL CO-OPERATION

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

This report contains a review of the Agency's technical co-operation activities in Jordan 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.

JORDAN

INTRODUCTION	i
Assistance by Source	1
TACF Assistance	2
Extrabudgetary Assistance	3
TC Project Disbursements by Sector	4
Assistance by Type	5
Assistance by Component/Sector	6
Jordan's Ranking as TC Recipient	7
Top Five Recipients	8-9
Financial Summary of Assistance	10
Projects by Sector (Allotments/Disbursements)	11
Projects by Sector (Completed & Operational)	12
TC Project Components by Sector	13
Agency Fellows	14
Long-term Fellowships	15
Fellows Holding More than One Award	16
Training Course Participants	17
Multiple Participants in Training Courses	18-21
Projects Completed	22-23
Operational Projects	24-25
Counterpart Institutions (by Project)	26-28
Counterpart Institutions (by Institute)	29-32
Long-Term Assignments	33
Research Contracts/Agreements	34
Jordanian Experts or Lecturers	35
Fellowships and Scientific Visits Hosted	36
Regional/Interregional Courses Hosted	37

T

A

B

L

E

OF

C

O

N

T

E

N

T

S

INTRODUCTION

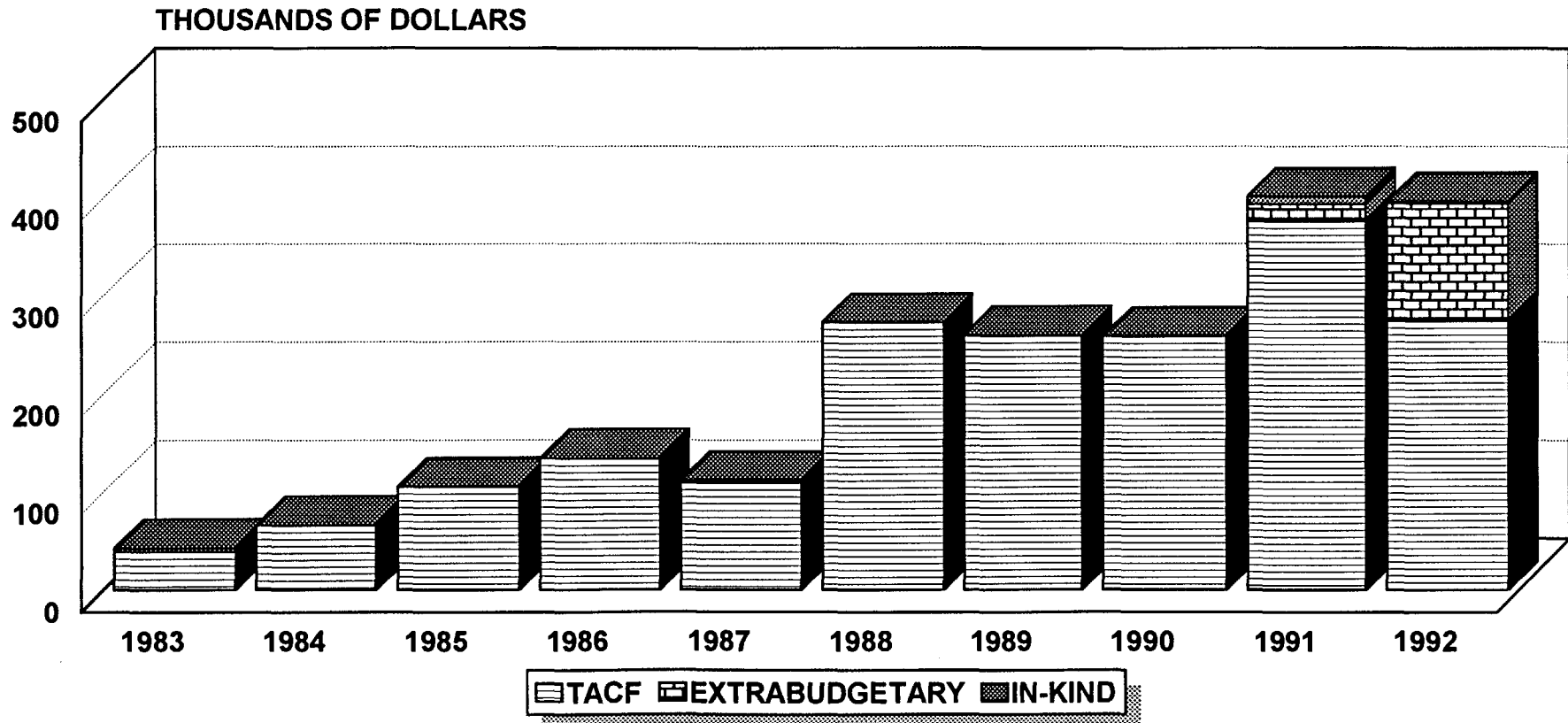
The country programme summary reported on here is one in the series of such studies being undertaken of the Agency's TC programme with Member States. With almost \$2.9 million of Agency support received, Jordan ranks 53rd among all recipients of technical assistance during the period 1958 through 1992.

More than half of the assistance received during the past ten years has been provided in the form of equipment (58%), complemented by expert services (27%) and training (15%). The bulk of the resources was made available through the TACF (92%), while only small shares were provided through extrabudgetary contributions (7%) or in kind (1%).

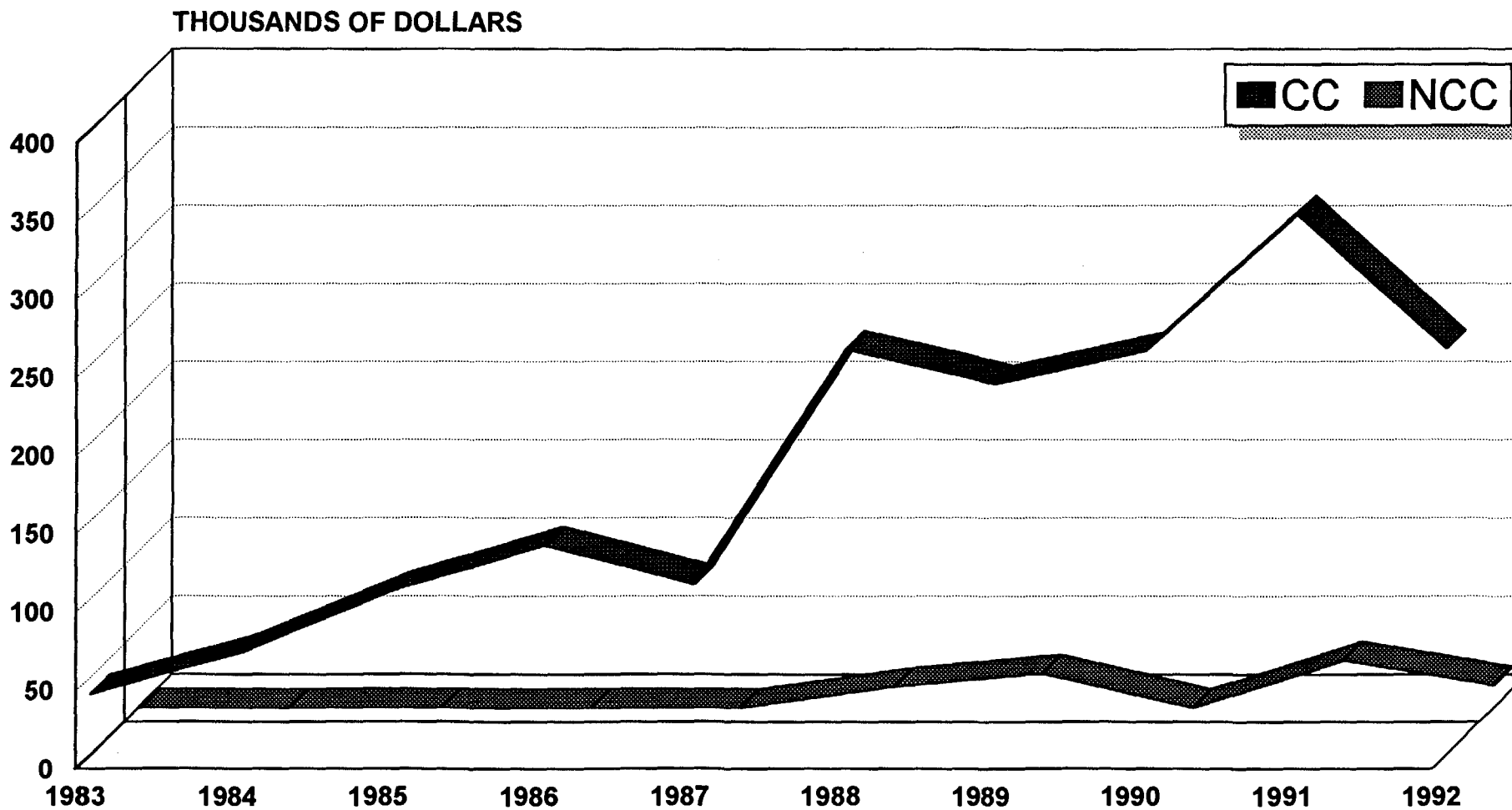
With regard to total disbursements, by sector, under those projects that were operational during the period 1983 through mid-October 1993, the five major areas have been nuclear physics and chemistry (19%), general atomic energy development (18%), industry and hydrology (17%), nuclear raw materials (13%) and agriculture (11%), followed by nuclear safety (9%), nuclear engineering and technology (7%) and nuclear medicine (6%).

During the past ten years, Jordan has provided experts and training course lecturers for a total of 31 assignments, and has hosted one fellowship as well as five regional training events with a total of 38 participants.

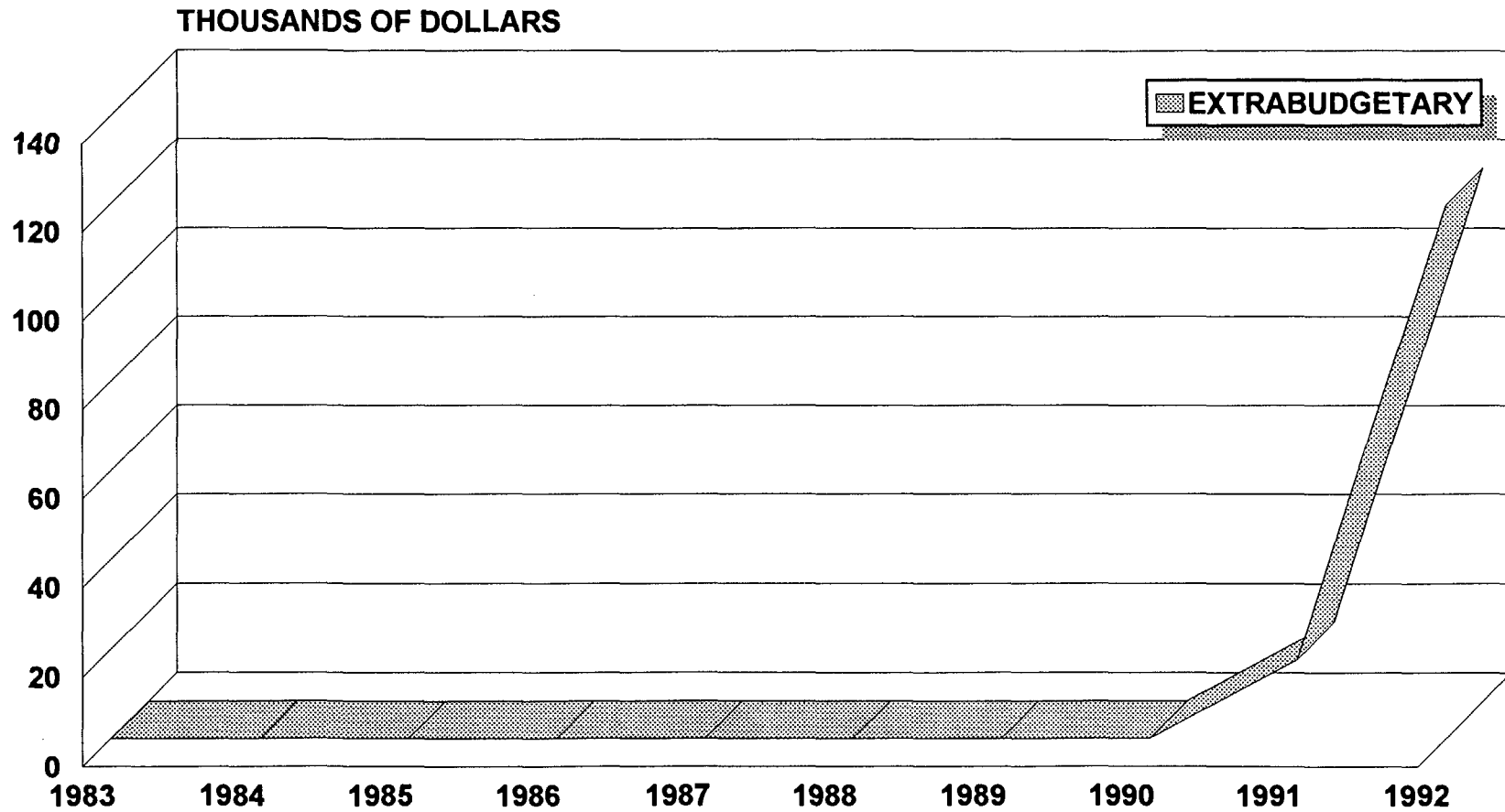
ASSISTANCE PROVIDED BY THE AGENCY TO JORDAN BY SOURCE (1983 - 1992)



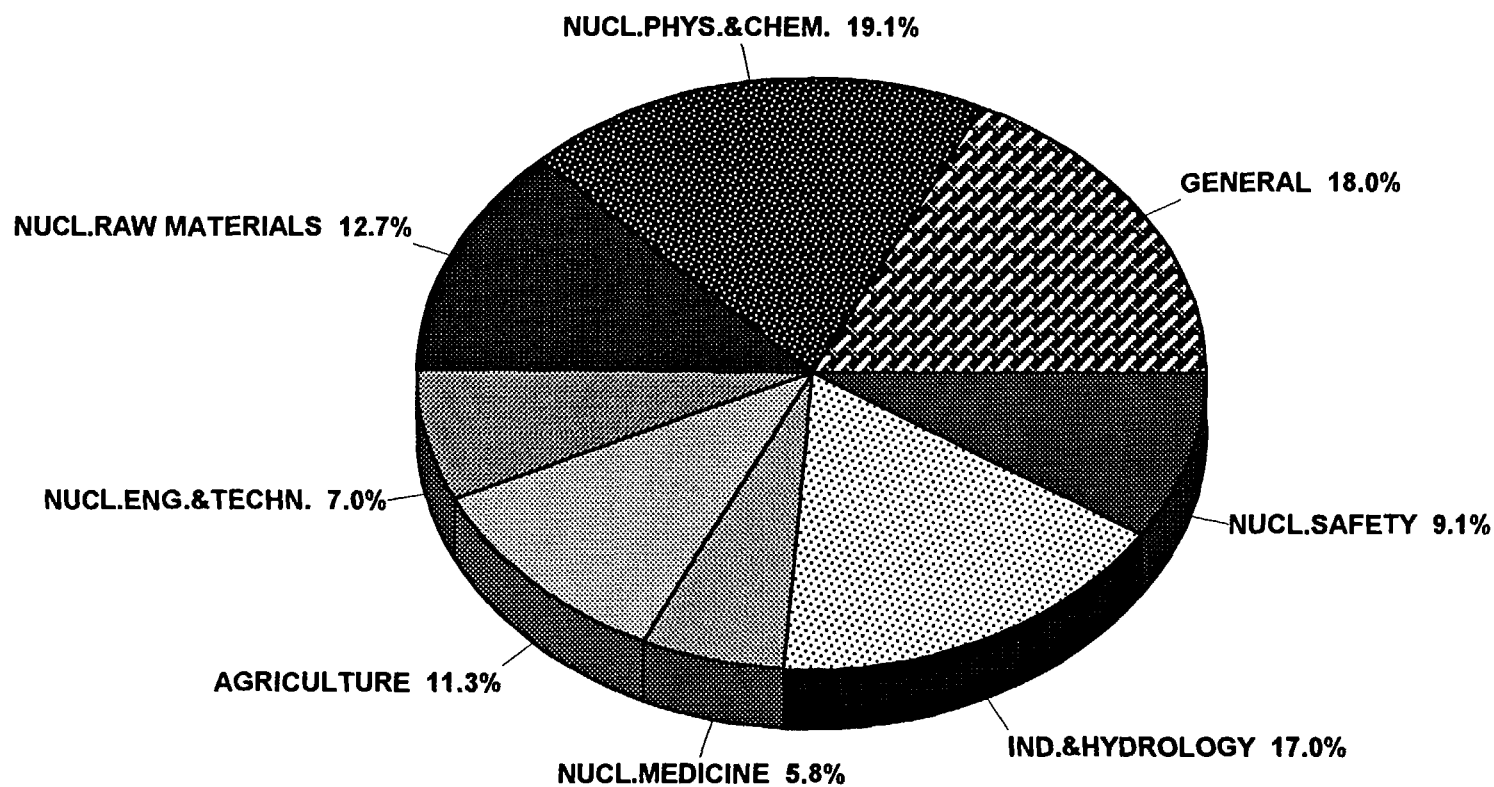
TACF ASSISTANCE PROVIDED TO JORDAN (1983 - 1992) BY CC AND NCC



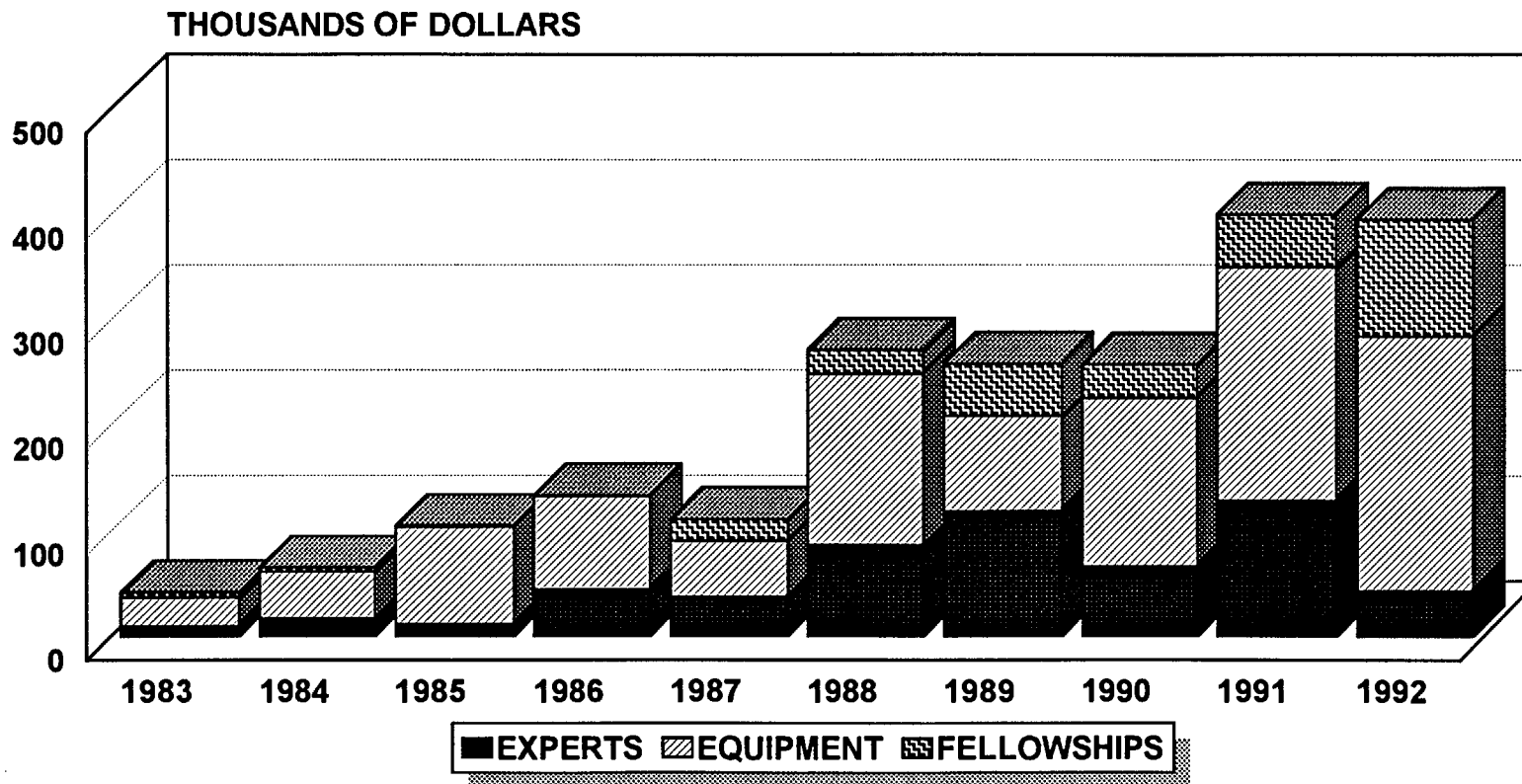
EXTRABUDGETARY ASSISTANCE PROVIDED TO JORDAN (1983 - 1992)



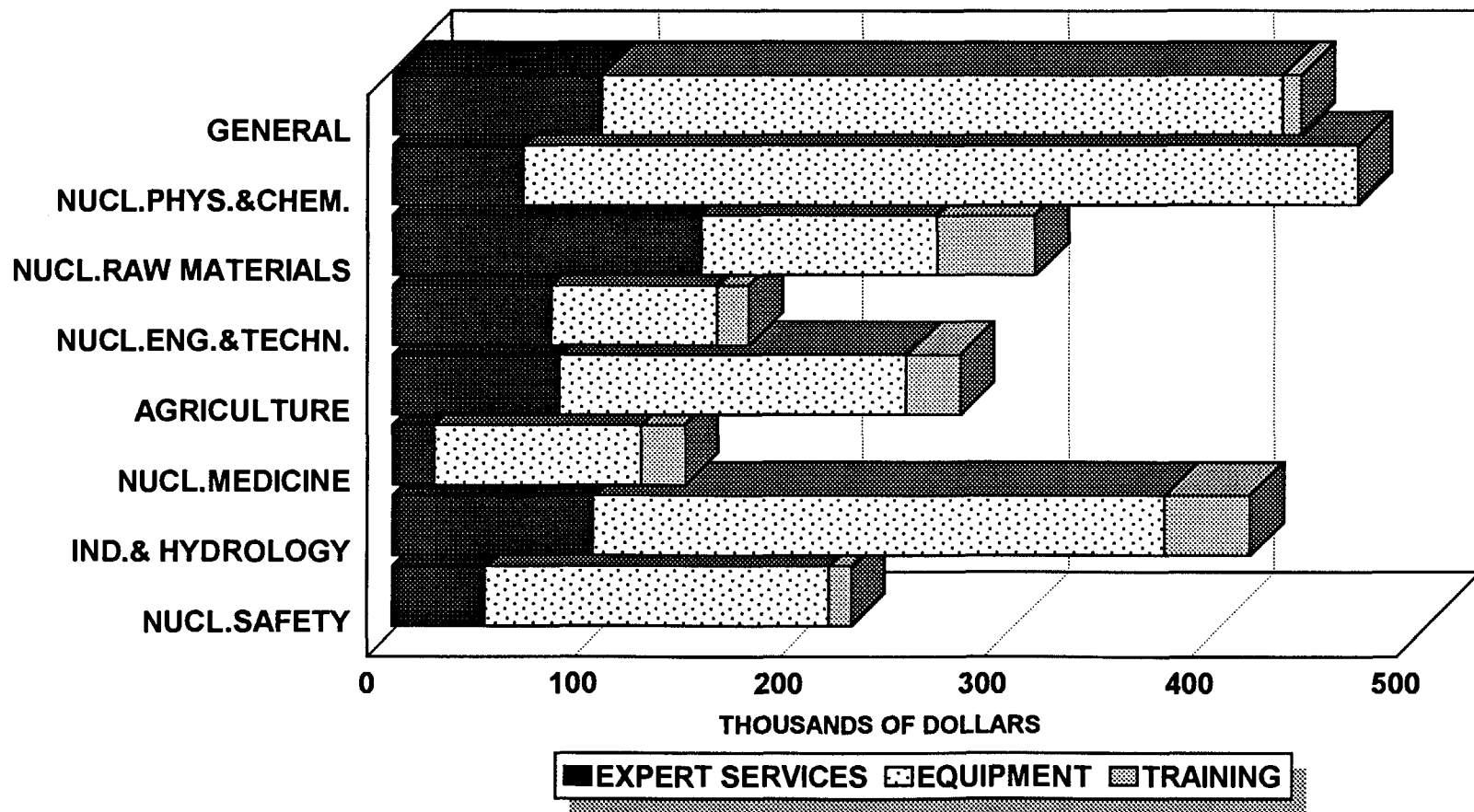
TC PROJECT DISBURSEMENTS IN JORDAN BY SECTOR (1983 - 1993)



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



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



THE AGENCY'S TECHNICAL CO-OPERATION PROGRAMME WITH JORDAN

ALL SOURCES

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

YEAR	RANKING	AMOUNT
1958-82	47 th	836.3
1983	69 th	41.9
1984	63 rd	65.2
1985	60 th	104.4
1986	57 th	133.2
1987	62 nd	110.6
1988	34 th	271.7
1989	45 th	258.4
1990	45 th	257.7
1991	35 th	400.3
1992	37 th	395.4
1958-92	53 rd	2875.1

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

ALL SOURCES

Year	I	II	III	IV	V	JORDAN
1958-82	BRA 8507.3	IND 6849.4	ARG 5528.2	PAK 5492.7	CHI 5240.1	47 th - 836.3
1983	EGY 2077.9	PER 1116.8	VIE 948.1	PHI 778.6	IRA 722.1	69 th - 41.9
1984	EGY 3625.9	PER 1750.4	THA 1094.6	CUB 1028.7	PHI 881.2	63 rd - 65.2
1985	EGY 2494.8	PER 1120.7	THA 1117.4	BGD 1068.2	PHI 963.7	60 th - 104.4
1986	EGY 2317.0	BRA 1452.9	THA 1169.4	POL 1050.3	BGD 896.4	57 th - 133.2
1987	HUN 3452.6	EGY 1775.4	THA 1742.4	INS 1312.5	YUG 1223.2	62 nd - 110.6
1988	EGY 1486.9	BUL 1361.6	CPR 1278.5	THA 1158.7	BRA 1096.7	34 th - 271.7
1989	CPR 1542.3	EGY 1505.1	THA 1205.3	BRA 1096.5	INS 999.1	45 th - 258.4
1990	POL 2308.1	CPR 2005.0	VIE 1589.2	INS 1412.6	BRA 1229.1	45 th - 257.7
1991	INS 1305.2	CPR 975.0	EGY 959.8	BRA 951.2	BUL 934.7	35 th - 400.3
1992	EGY 1586.3	INS 1342.1	CPR 1328.8	MEX 1127.8	POL 1036.4	37 th - 395.4
1958-92	EGY 23808.6	BRA 17736.8	THA 15332.0	INS 13725.9	PER 13129.6	53 rd - 2875.1

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

TECHNICAL ASSISTANCE AND CO-OPERATION FUND

Year	I	II	III	IV	V	JORDAN
1958-82	HUN 2971.7	EGY 2405.8	PAK 2340.5	THA 2000.3	BRA 1983.5	49 th - 547.2
1983	EGY 1049.4	VIE 897.4	POL 667.8	PAK 498.5	PHI 430.0	65 th - 38.8
1984	EGY 1197.2	CUB 655.6	ECU 565.6	BGD 506.3	BUL 472.4	60 th - 65.2
1985	BGD 991.8	VIE 745.0	THA 708.7	BRA 571.8	POR 538.7	56 th - 104.4
1986	BRA 1381.8	THA 871.9	POL 833.5	BGD 823.9	SYR 751.8	52 nd - 133.2
1987	HUN 3305.2	DRK 986.8	BUL 888.5	INS 885.8	EGY 878.9	61 st - 108.3
1988	BUL 1195.6	PER 856.5	EGY 768.6	INS 751.7	MAL 656.0	27 th - 271.7
1989	EGY 990.9	CPR 868.2	POR 769.6	CHI 756.9	MAL 619.4	37 th - 258.4
1990	POL 1562.3	VIE 1518.8	DRK 1156.2	IRA 958.0	YUG 933.4	39 th - 257.7
1991	BUL 893.1	PAK 868.8	INS 855.1	VIE 817.6	CPR 814.5	31 st - 375.3
1992	EGY 1255.7	CPR 1009.0	VIE 872.8	INS 826.6	IRA 795.5	39 th - 273.7
1958-92	EGY 10847.0	HUN 8743.7	POL 8486.4	VIE 8199.9	PAK 8115.6	49 th - 2433.9

ASSISTANCE PROVIDED BY THE AGENCY TO JORDAN

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	10.0	27.2	4.7	-	-	41.9	-	38.8	-	-	3.1	41.9
1984	16.7	44.5	4.0	-	-	65.2	-	65.2	-	-	-	65.2
1985	11.4	92.0	1.0	-	-	104.4	-	104.4	-	-	-	104.4
1986	44.0	88.3	0.9	-	-	133.2	-	133.2	-	-	-	133.2
1987	37.5	52.8	20.3	-	-	110.6	-	108.3	-	-	2.3	110.6
1988	86.2	162.2	23.3	-	-	271.7	-	258.5	13.2	-	-	271.7
1989	118.7	89.6	50.1	-	-	258.4	-	236.5	21.9	-	-	258.4
1990	65.8	159.5	32.4	-	-	257.7	-	257.7	-	-	-	257.7
1991	128.0	221.9	50.4	-	-	400.3	-	345.3	30.0	17.7	7.3	400.3
1992	42.9	241.4	111.1	-	-	395.4	-	259.4	14.3	119.8	1.9	395.4
1983-92	561.2	1 179.4	298.2	-	-	2 038.8	-	1 807.3	79.4	137.5	14.6	2 038.8

TECHNICAL CO-OPERATION PROJECTS IN JORDAN
BY SECTOR

PROJECTS COMPLETED AND OPERATIONAL 1983 - 1993

TOTAL PROJECT ALLOTMENTS AND DISBURSEMENTS
(as of mid-October 1993)

SECTOR	NO. OF PROJECTS	ALLOTMENTS \$	% OF TOTAL	DISBURSEMENTS \$	% OF TOTAL
General atomic energy development	5	528 500	18.1	441 777	18.0
Nuclear physics and chemistry	3	466 536	16.1	469 411	19.1
Nuclear raw materials	2	306 429	10.5	312 782	12.7
Nuclear engineering and technology	1	179 583	6.1	172 986	7.0
Nuclear techniques in agriculture	3	283 054	9.7	276 858	11.3
Nuclear medicine	2	203 840	7.0	142 103	5.8
Nuclear techniques in biology	-	-	-	-	-
Nuclear techniques in industry and hydrology	4	535 634	18.4	416 972	17.0
Nuclear safety	4	409 725	14.1	223 464	9.1
TOTAL	24	2 913 301	100.0	2 456 353	100.0

TECHNICAL CO-OPERATION PROJECTS IN JORDAN
 COMPLETED AND OPERATIONAL, BY SECTOR, 1983 - 1993
 (As of mid-October 1993)

Sector	No. of projects	Total project allotments \$	Total project disbursements \$
<u>Completed projects</u>			
General atomic energy development	3	330 070	329 383
Nuclear physics and chemistry	3	466 536	469 411
Nuclear raw materials	2	306 429	312 782
Nuclear engineering and technology	1	179 583	172 986
Nuclear techniques in agriculture	1	4 854	4 725
Nuclear medicine	1	63 890	61 881
Nuclear techniques in biology	-	-	-
Nuclear techniques in industry & hydrology	2	348 354	344 192
Nuclear safety	1	51 600	48 921
TOTAL	14	1 751 316	1 744 281
<u>Operational projects</u>			
General atomic energy development	2	198 430	112 394
Nuclear physics and chemistry	-	-	-
Nuclear raw materials	-	-	-
Nuclear engineering and technology	-	-	-
Nuclear techniques in agriculture	2	278 200	272 133
Nuclear medicine	1	139 950	80 222
Nuclear techniques in biology	-	-	-
Nuclear techniques in industry & hydrology	2	187 280	72 780
Nuclear safety	3	358 125	174 543
TOTAL	10	1 161 985	712 072

**EXPERT SERVICES, EQUIPMENT AND PROJECT-FUNDED TRAINING PROVIDED TO JORDAN, BY SECTOR
PROJECTS COMPLETED AND OPERATIONAL 1983 - 1993
(As of mid-October 1993)**

FIELD	TOTAL PROJECT ALLOTMENTS				TOTAL PROJECT DISBURSEMENTS			
	EXPERT SERVICES		EQUIPMENT	TRAINING	EXPERT SERVICES		EQUIPMENT	TRAINING
	M/M	\$	\$	\$	M/M	\$	\$	\$
General atomic energy development	17/23	136 270	358 750	33 480	14/13	101 243	331 778	8 756
Nuclear physics and chemistry	12/05	57 370	409 166	-	11/02	63 106	406 305	-
Nuclear raw materials	18/21	137 200	114 730	54 499	18/21	150 121	115 150	47 511
Nuclear engineering and technology	9/21	81 630	80 980	16 973	9/21	76 865	80 980	15 141
Nuclear techniques in agriculture	8/24	75 174	171 830	36 050	7/14	80 828	169 327	26 703
Nuclear medicine	3/07	33 604	142 436	27 800	2/04	20 437	99 939	21 727
Nuclear techniques in biology	-	-	-	-	-	-	-	-
Nuclear techniques in industry & hydrology	17/20	138 018	329 705	67 911	13/27	97 151	277 930	41 891
Nuclear safety	11/17	123 025	220 000	66 700	4/02	44 740	167 626	11 098
TOTAL	99/18	782 291	1 827 597	303 413	81/14	634 491	1 649 035	172 827

AGENCY FELLOWS FROM JORDAN

1983 - 1993¹
(As of mid-October 1993)

Sector	No. of fellowships	No. of months/days	Host countries
General atomic energy development	4	5/11	TUR, PAK, MAL, RUS, IAEA
Nuclear physics	-	-	-
Nuclear chemistry	2	7/02	IND, POL
Nuclear raw materials	7	16/12	IND, PAK, INS, CAN
Nuclear engineering and technology	7	16/24	GER, YUG, HUN, IAEA
Nuclear techniques in agriculture	6	9/07	NET, PAK, BEL, GER, IAEA
Nuclear medicine	10	25/11	KUW, EGY, AUS, IND, UK, IAEA
Nuclear techniques in biology	1	1/24	SWE
Nuclear techniques in industry and hydrology	12	25/14	AUS, POL, GER, IND, UK, IAEA
Nuclear safety	5	14/00	POL, USA, IRA, SYR, HUN, TUR
TOTAL	54	121/15	

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

JORDAN
LONG-TERM FELLOWSHIPS
1983 - 1993
(As of mid-October 1993)

Name	Field of study	Host country	Date	Duration	Project
RISHEQ	Nuclear medicine	UK	Aug.88 - Sep.89	13/07	-

**JORDANIAN NATIONALS WHO WERE AWARDED MORE THAN ONE
 FELLOWSHIP OR SCIENTIFIC VISIT
 1983 - 1993
 (As of mid-October 1993)**

Name	Field of study	Host country	Date	Duration	Project
AJLOUNI	1. Gamma spectrometry 2. General industrial applications	YUG POL/IND	Mar.87 Sep.93 - Oct.93	0/05 0/14	RER/9/003 RER/0/007
AMRO, H.	1. Instrumentation maintenance 2. Isotope hydrology	GER GER/IAEA	Oct.85 Sep.87 - Oct.87	0/12 0/26	JOR/8/003 JOR/8/003

AGENCY TRAINING COURSES WITH JORDANIAN PARTICIPATION

1983 - 1993
(As of mid-October 1993)

Field	Number of participants	Number of courses
General atomic energy development	5	4
Nuclear physics	6	6
Nuclear chemistry	1	1
Nuclear raw materials	-	-
Nuclear engineering and technology	15	11
Nuclear techniques in agriculture	27	20
Nuclear medicine	38	20
Nuclear techniques in biology	-	-
Nuclear techniques in industry & hydrology	12	5
Nuclear safety	37	25
TOTAL	141	92

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY JORDANIAN NATIONALS
1983 - 1993
(As of mid-October 1993)**

Name	Course No.	Course title	Year	Location
ABDUL KADER SAQUER	RER/9/007 (004)	RTC on regulatory practices for radiation safety	1992	UAE
	RER/9/007 (005)	RWS on radiation protection and quality assurance in diagnostic radiology	1993	CYP
ABUTALEB	INT/9/093 (001)	ITC on safety and regulation of sealed sources of radioactive material	1989	USA
	INT/9/117 (001)	ITC on safe transport of radioactive materials	1991	UK
	RER/6/002 (009)	RWS on industrial applications of isotopes and radiation	1992	SAU
AL-AJLOUNI	RER/9/009 (001)	RTC on management of radioactive wastes from hospitals and other nuclear application activities	1991	TUR
	RER/9/014 (001)	RTC on waste management - a system approach	1992	CZE
AL-MAS'AD	INT/4/115 (001)	Advanced ITC on nuclear electronics	1993	CPR
	RER/4/004 (001)	RTC on nuclear electronics (maintenance oriented)	1990	TUR
AL-MOMANI	RER/8/002 (003)	Isotope hydrology in the Middle East - Second regional co-ordination meeting and workshop	1989	SYR
	RER/8/002 (004)	RWS on isotope hydrology	1991	TUR
AL-SHALABI	INT/9/045 (001)	ITC for radiation protection officers in regulatory bodies	1984	GDR
	RER/9/007 (002)	RWS on radiation protection in industrial application of ionizing radiation	1989	IRQ
AL-SHIAB	INT/6/037 (001)	ITC on modern aspects in radiopharmacy	1989	CZE
	RER/6/002 (004)	RWS on generator-produced radiopharmaceuticals	1990	IRQ
AL-TALEB	RER/6/002 (001)	Regional practical workshop on the introduction to the optimum use of radiopharmaceuticals in nuclear medicine	1988	KUW
	RER/6/002 (008)	RWS on quality control in hospital radiopharmacy	1992	UAE
	RER/6/005 (001)	RWS on synthesis, kit preparation and quality control of new functional TC-99M radiopharmaceuticals for SPET imaging	1993	TUR

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY JORDANIAN NATIONALS
1983 - 1993
(As of mid-October 1993)**

Name	Course No.	Course title	Year	Location
AL-YAHIA	INT/1/047 (001) RER/9/003 (007)	ITC on experimental nuclear spectroscopy RWS on radiochemical measurements in food and environmental samples	1990 1990	GRE YUG
AL-ZBOON	INT/6/035 (001) RER/6/002 (001)	ITC on nuclear medicine Regional practical workshop on the introduction to the optimum use of radiopharmaceuticals in nuclear medicine	1987 1988	USSR KUW
DAOUD	INT/5/103 (001) RER/5/004 (001)	ITC on the use of isotope and radiation techniques in studies on biological nitrogen fixation RWS on the use of nuclear and related techniques in plant nutrition and water balance studies in legume-cereal crop rotation systems	1986 1991	AUS SYR
ELAYAN	RER/6/003 (001) RER/6/004 (001)	RTC on dosimetry in radiotherapy RTC on radiotherapy treatment planning	1991 1993	CZE TUR
GEDEON	RER/8/002 (003) RER/8/002 (004)	Isotope hydrology in the Middle East - Second regional co-ordination meeting and workshop RWS on isotope hydrology	1989 1991	SYR TUR
GHAWI	RER/5/004 (001) RER/5/004 (002)	RWS on the use of nuclear and related techniques in plant nutrient and water balance studies in legume-cereal crop rotation systems RWS on the use of nuclear and related techniques in plant nutrient and water balance studies in rain-fed legume-cereal crop rotation systems and irrigated agricultural areas	1991 1992	SYR TUR
GOUSOUS	RAS/6/006 (001) RER/6/002 (008)	RTC on the brachytherapy of the uterine cancer using manual and remote after-loading techniques RWS on quality control in hospital radiopharmacy	1986 1992	MAL UAE

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY JORDANIAN NATIONALS
1983 - 1993
(As of mid-October 1993)**

Name	Course No.	Course title	Year	Location
HABJOUQA	INT/4/101 (001) RER/8/002 (003)	Advanced ITC on nuclear electronics Isotope hydrology in the Middle East - Second regional co-ordination meeting and workshop	1990 1989	USA SYR
KHALIL YOUSEF AWAD KHALIL	INT/9/103 (001) RER/5/006 (001) RER/9/007 (004) RER/9/009 (001)	ITC on safety and regulation of radiation sources RTC on the regulatory control of food irradiation RTC on regulatory practices for radiation safety RTC on management of radioactive wastes from hospitals and other nuclear application activities	1990 1992 1992 1991	USA HUN UAE TUR
KHARBAT	INT/0/029 (001) INT/4/073 (001)	ITC on electric system expansion planning including grid considerations ITC on electricity demand forecasting in nuclear power planning	1983 1985	USA USA
KHATTARI	INT/5/086 (001) RER/5/004 (002)	ITC on the use of isotope and radiation techniques in studies on soil-plant relationships RWS on the use of nuclear and related techniques in plant nutrient and water balance studies in rain-fed legume-cereal crop rotation systems and irrigated agricultural areas	1983 1992	AUS TUR
KHRAISAT	INT/6/041 (001) RER/6/002 (001) RER/6/005 (001)	ITC on advanced single photon emission computerized tomography with emphasis on brain and heart studies Regional practical workshop on the introduction to the optimum use of radiopharmaceuticals in nuclear medicine RWS on synthesis, kit preparation and quality control of new functional TC-99M radiopharmaceuticals for SPET imaging	1992 1988 1993	ITA KUW TUR
KTAISHAT	RER/9/007 (003) RER/9/018 (001)	RWS on radiation protection in medical applications of ionizing radiation RTC on medical preparedness for radiation accidents	1990 1993	KUW HUN

**MULTIPLE PARTICIPATION IN AGENCY TRAINING COURSES
BY JORDANIAN NATIONALS
1983 - 1993
(As of mid-October 1993)**

Name	Course No.	Course title	Year	Location
MANSI ABUSABHA	INT/9/098 (001)	ITC on safety and regulation of unsealed sources of radioactive material	1989	IRE
	RER/9/003 (001)	Environmental monitoring in the Middle East - Workshop on derived intervention levels for Arab countries	1987	SYR
	RER/9/003 (005)	RWS on SAPOS - network-maintenance technicians and engineers	1990	SYR
MUR	INT/0/039 (001)	IWS on IAEA technical co-operation practices and procedures	1984	SUD
	RER/9/003 (001)	Environmental monitoring in the Middle East - Workshop on derived intervention levels for Arab countries	1987	SYR
NEIROUKH	INT/8/025 (001)	ITC on non-destructive testing, radiography and ultrasonics techniques	1987	KEN
	INT/9/099 (001)	ITC on management of radioactive wastes with regard to radioisotope applications	1989	GER
	RER/6/002 (004)	RWS on generator-produced radiopharmaceuticals	1990	IRQ
	RER/9/007 (002)	RWS on radiation protection in industrial application of ionizing radiation	1989	IRQ
QUTIESHAT	INT/6/029 (001)	ITC on nuclear medicine	1984	USSR
	RER/9/018 (001)	RTC on medical preparedness for radiation accidents	1993	HUN
SALLAJ	INT/9/048 (001)	ITC on planning, preparedness and response to radiological emergencies	1984	USA
	RER/9/007 (003)	RWS on radiation protection in medical applications of ionizing radiation	1990	KUW
SMAIR	INT/4/112 (001)	ITC on nuclear electronics	1992	MEX
	RER/9/003 (005)	RWS on SAPOS - network-maintenance technicians and engineers	1990	SYR

PROJECTS COMPLETED IN JORDAN SINCE 1983
(As of mid-October 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1982	JOR/0/002	Nuclear energy planning	1/00	5 400	-	-	1/06	7 773	-	-	1985
1983	JOR/0/003	Energy and electricity planning	2/28	18 920	-	-	2/28	9 766	-	-	1986
1985	JOR/0/004	Radiation and radio-isotope laboratory	8/25	61 850	243 900	-	8/27	69 520	242 324	-	1992
1978	JOR/1/002	Nuclear science	8/15	31 100	222 779	-	8/12	29 626	219 813	-	1983
1987	JOR/1/003	X-ray fluorescence	2/12	17 310	88 150	-	1/12	17 898	88 084	-	1991
1985	JOR/2/002	Radiochemical laboratory	1/08	8 960	98 237	-	1/08	15 582	98 408	-	1993
1988	JOR/3/002	Uranium recovery from phosphoric acid	1/11	10 050	57 670	-	1/11	10 232	58 090	-	1992
1988	JOR/3/003	Uranium exploration	17/10	127 150	57 060	54 499	17/10	139 889	57 060	47 511	1992
1989	JOR/4/002	Nuclear instrumentation maintenance workshop	9/21	81 630	80 980	16 973	9/21	76 865	80 980	15 141	1993

PROJECTS COMPLETED IN JORDAN SINCE 1983
(As of mid-October 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1989	JOR/5/004	Food irradiation	0/21	4 854	-	-	0/12	4 725	-	-	1992
1989	JOR/6/007	Radiotherapy	0/28	8 020	55 870	-	0/28	6 254	55 627	-	1992
1977	JOR/8/002	Radioisotopes in hydrology	0/26	3 033	104 681	-	1/00	5 805	106 652	-	1983
1983	JOR/8/003	Isotopes in hydrology	9/24	67 605	130 024	43 011	9/24	59 820	130 024	41 891	1992
1984	JOR/9/002	Radiation protection	1/00	6 600	45 000	-	0/22	3 476	45 445	-	1986
	TOTAL	14 projects	66/19	452 482	1 184 351	114 483	65/11	457 231	1 182 507	104 543	

OPERATIONAL PROJECTS IN JORDAN
(As of mid-October 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS			
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING
			M/M	\$	\$	\$	M/M	\$	\$	\$
1991	JOR/0/005	Nuclear information centre	2/00	18 150	28 500	14 580	1/12	14 184	22 394	8 756
1993	JOR/0/006	Analytical and training laboratory	3/00	31 950	86 350	18 900	-	-	67 060	-
1987	JOR/5/003	Nuclear techniques in agriculture	4/24	40 275	120 320	15 150	4/27	46 517	119 425	12 612
1991	JOR/5/005	Nuclear techniques for animal production improvement	3/09	30 045	51 510	20 900	2/05	29 586	49 902	14 091
1991	JOR/6/008	Upgrading radiotherapy at Al Bashir Hospital	2/09	25 584	86 566	27 800	1/06	14 183	44 312	21 727
1991	JOR/8/004	Industrial application of radiation and radioisotopes	4/00	35 880	50 000	-	3/03	31 526	41 254	-
1993	JOR/8/005	Multi-purpose Co-60 irradiation facility	3/00	31 500	45 000	24 900	-	-	-	-
1991	JOR/9/003	Radiological accidents response team	1/19	15 025	50 000	10 900	1/14	19 122	50 070	6 741

OPERATIONAL PROJECTS IN JORDAN
(As of mid-October 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS			
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING
			M/M	\$	\$	\$	M/M	\$	\$	\$
1991	JOR/9/004	Radioactivity in ground and drinking water	3/28	48 300	85 000	18 900	1/16	18 615	72 111	-
1993	JOR/9/005	Upgrading radiation inspection, licensing and radwaste management	5/00	53 100	40 000	36 900	0/10	3 527	-	4 357
	TOTAL	10 projects	32/29	329 809	643 246	188 930	16/03	177 260	466 528	68 284

COUNTERPART INSTITUTIONS IN JORDAN (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>GENERAL ATOMIC ENERGY DEVELOPMENT</u>		
JOR/0/002	Ministry of Industry and Trade, Amman	BADRAN
JOR/0/003	Jordan Electricity Authority, Amman	ELKARMI
JOR/0/004	Royal Scientific Society, Amman	AJLOUNI
JOR/0/005	Ministry of Energy and Mineral Resources, Amman	MUR
JOR/0/006	Ministry of Energy and Mineral Resources, Nuclear Energy Department, Amman	MA'LY
<u>NUCLEAR PHYSICS AND CHEMISTRY</u>		
JOR/1/002	University of Jordan, Faculty of Science, Amman	SHAHIN KHUBEIS
JOR/1/003	University of Jordan, Faculty of Science, Department of Physics, Amman	SALEH AL-SALEH
JOR/2/002	University of Jordan, Faculty of Science, Chemistry Department, Amman	KHALILI
<u>NUCLEAR RAW MATERIALS</u>		
JOR/3/002	Jordan Phosphate Mines Co., Research Department, Amman	JALLAD
JOR/3/003	Natural Resources Authority, Geological Survey and Bureau of Mines, Amman	EL-KAYSI

COUNTERPART INSTITUTIONS IN JORDAN (I)
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR ENGINEERING AND TECHNOLOGY</u>		
JOR/4/002	1. Royal Scientific Society, Electronic Services and Training Centre, Amman	PALTIKIAN
	2. University of Jordan, Faculty of Science, Department of Physics, Amman	SHADERMA
<u>AGRICULTURE</u>		
JOR/5/003	University of Jordan, Faculty of Agriculture, Amman	MAHMOUD
JOR/5/004	Ministry of Energy and Mineral Resources, Amman	AMR
JOR/5/005	1. University of Jordan, Faculty of Agriculture, Department of Animal Production, Amman	LUBBADEH
	2. Ministry of Agriculture, Al-Khanazer Farm Station, Al-Khanazer	HUNAITI
<u>NUCLEAR MEDICINE</u>		
JOR/6/007	Ministry of Health, Al-Bashir Hospital, Jordan Cancer Centre, Amman	KTAISHAT
JOR/6/008	Ministry of Health, Al-Bashir Hospital, Radiotherapy Department, Amman	KTAISHAT

COUNTERPART INSTITUTIONS IN JORDAN (I)

(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR TECHNIQUES IN INDUSTRY AND HYDROLOGY</u>		
JOR/8/002	Ministry of Water and Irrigation, Water Authority, Water Research and Isotope Laboratories, Amman	KHATIB
JOR/8/003	Ministry of Water and Irrigation, Water Authority, Water Research and Isotope Laboratories, Amman	GEDEON
JOR/8/004	Royal Scientific Society, Department of Mechanical Engineering, Amman	AJLOUNI
JOR/8/005	Ministry of Energy and Mineral Resources, Nuclear Energy Department, Amman	ABUTALEB
<u>NUCLEAR SAFETY</u>		
JOR/9/002	University of Jordan, Faculty of Science, Department of Physics, Amman	AHMAD-BITAR
JOR/9/003	Ministry of Energy and Mineral Resources, Amman	MUR
JOR/9/004	Ministry of Water and Irrigation, Water Authority, Water Research and Isotope Laboratories, Amman	GEDEON
JOR/9/005	Ministry of Energy and Mineral Resources, Radiation Protection Section, Amman	KHALIL Y.A.K.

COUNTERPART INSTITUTIONS IN JORDAN (II)
(By Institute)

AMMAN

Ministry of Industry and Trade
Amman

JOR/0/002 Nuclear Energy Planning

Ministry of Energy and Mineral Resources
Amman

JOR/0/005 Nuclear Information Centre
JOR/5/004 Food Irradiation
JOR/9/003 Radiological Accidents Response Team

Ministry of Energy and Mineral Resources
Nuclear Energy Department
Amman

JOR/0/006 Analytical and Training Laboratory
JOR/8/005 Multi-Purpose Co-60 Irradiation Facility

Ministry of Energy and Mineral Resources
Radiation Protection Section
Amman

JOR/9/005 Upgrading Radiation Inspection, Licensing & Radwaste Management

Ministry of Health
Al-Bashir Hospital
Jordan Cancer Centre
Amman

JOR/6/007 Radiotherapy

Ministry of Health
Al-Bashir Hospital
Radiotherapy Department
Amman

JOR/6/008 Upgrading Radiotherapy at Al-Bashir Hospital

COUNTERPART INSTITUTIONS IN JORDAN (II)
(By Institute)

AMMAN (cont'd)

Ministry of Water and Irrigation
Water Authority
Water Research and Isotope Laboratories
Amman

JOR/8/002 Radioisotopes in Hydrology
JOR/8/003 Isotopes in Hydrology
JOR/9/004 Radioactivity in Ground and Drinking Water

Jordan Electricity Authority
Amman

JOR/0/003 Energy and Electricity Planning

Royal Scientific Society
Amman

JOR/0/004 Radiation and Radioisotope Laboratory

Royal Scientific Society
Electronic Services and Training Centre
Amman

JOR/4/002 Nuclear Instrumentation Maintenance Workshop

Royal Scientific Society
Department of Mechanical Engineering
Amman

JOR/8/004 Industrial Application of Radiation and Radioisotopes

Natural Resources Authority
Geological Survey and Bureau of Mines
Amman

JOR/3/003 Uranium Exploration

COUNTERPART INSTITUTIONS IN JORDAN (II)
(By Institute)

AMMAN (cont'd)

Jordan Phosphate Mines Co.
Research Department
Amman

JOR/3/002 Uranium Recovery from Phosphoric Acid

University of Jordan
Faculty of Science
Amman

JOR/1/002 Nuclear Science

University of Jordan
Faculty of Science
Department of Physics
Amman

JOR/1/003 X-Ray Fluorescence
JOR/4/002 Nuclear Instrumentation Maintenance Workshop
JOR/9/002 Radiation Protection

University of Jordan
Faculty of Science
Chemistry Department
Amman

JOR/2/002 Radiochemical Laboratory

University of Jordan
Faculty of Agriculture
Amman

JOR/5/003 Nuclear Techniques in Agriculture

COUNTERPART INSTITUTIONS IN JORDAN (II)
(By Institute)

AMMAN (cont'd)

University of Jordan
Faculty of Agriculture
Department of Animal Production
Amman

JOR/5/005 Nuclear Techniques for Animal Production Improvement

AL-KHANAZER

Ministry of Agriculture
Al-Khanazer Farm Station
Al-Khanazer

JOR/5/005 Nuclear Techniques for Animal Production Improvement

**THE AGENCY'S TECHNICAL CO-OPERATION PROGRAMME WITH
JORDAN
SINCE 1983**

LONG-TERM EXPERT ASSIGNMENTS

JOR/3/003 Uranium Exploration

Task 02 - Uranium Exploration Geologist

- C. PERRIN (FRA) Oct 88 - Oct 89 12 months

To provide advice on the following activities:

1. Follow-up of airborne gamma ray spectrometric survey anomalies.
2. Planning and execution of regional geochemical (heavy mineral, stream sediment and rock) survey over Precambrian terrain of Jordan.
3. Assessment of the radioactive mineral potential of the country based on above activities.
4. Laboratory (chemical, mineralogy and petrology) support in radioactive mineral.

RESEARCH CONTRACTS/AGREEMENTS IN JORDAN SINCE 1983 ¹
(As of mid-October 1993)

Field of activity	No. of contracts/ agreements	Amount allocated \$
Nuclear techniques in biology	1	16 000

¹/ New awards since 1983

**SCIENTISTS FROM JORDAN SERVING AS AGENCY
TECHNICAL CO-OPERATION EXPERTS OR
TRAINING COURSE LECTURERS
1983 - 1993
(As of mid-October 1993)**

Name	No. of assignments	Project(s)
ABU SALEEM	1	RER/8/003
AJLOUNI	1	RER/9/003
AL-BATTEKHE	1	RER/5/004
AL-SAID	1	JOR/0/005
AL-SHALABI	3	INT/9/055, RAF/9/003, RAF/9/004
AL-YAHIA	1	RER/9/003
AMR	1	RER/5/003
AMRO	1	RER/8/002
ELKARMI	7	JOR/0/003, INT/0/046, INT/4/073, INT/4/083
GHAZI FALEH AL-AHMAD	1	RER/9/003
HABBAB	1	RER/5/003
HAMDAN	1	RER/5/003
MANSI ABUSABHA	3	RER/9/003
MUR	7	JOR/6/007, INT/0/038, INT/9/055, RER/9/003, RER/9/007
MUSA	1	JOR/0/003
TOTAL	31	

**AGENCY FELLOWSHIPS AND SCIENTIFIC VISITS
HOSTED BY JORDAN
1983 - 1993
(As of mid-October 1993)**

Recipient country	No. of fellowships	No. of scientific visits	TOTAL ¹
SYRIAN ARAB REPUBLIC	1	-	1

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

**REGIONAL AND INTERREGIONAL TRAINING EVENTS
HOSTED BY JORDAN
1983 - 1993
(As of mid-October 1993)**

Course No.	Course Title	Partici- pants	Year
RER/6/002 (003)	RWS on quality control in hospital radiopharmacy	8	1989
RER/8/002 (001)	Regional co-ordination meeting on isotope hydrology	7	1989
RER/8/002 (002)	RWS on isotope hydrology	6	1989
RER/9/003 (003)	Environmental monitoring in the Middle East - RWS on derived intervention levels for Arab Middle East	9	1988
RER/9/003 (006)	Environmental monitoring in the Middle East - Regional co-ordination meeting on intercomparison measurements	8	1990
	TOTAL	38	