



**INTERNATIONAL ATOMIC ENERGY AGENCY**



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IAEA-CPS-93/22  
17 December 1993  
Original: ENGLISH

## **COUNTRY PROGRAMME SUMMARY**

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

**DEPARTMENT OF TECHNICAL CO-OPERATION**

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# COUNTRY PROGRAMME SUMMARY

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HUNGARY  
1983 - 1993  
COUNTRY PROGRAMME SUMMARIES

EVALUATION SECTION

**DEPARTMENT OF TECHNICAL CO-OPERATION**

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

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

**HUNGARY**

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## INTRODUCTION

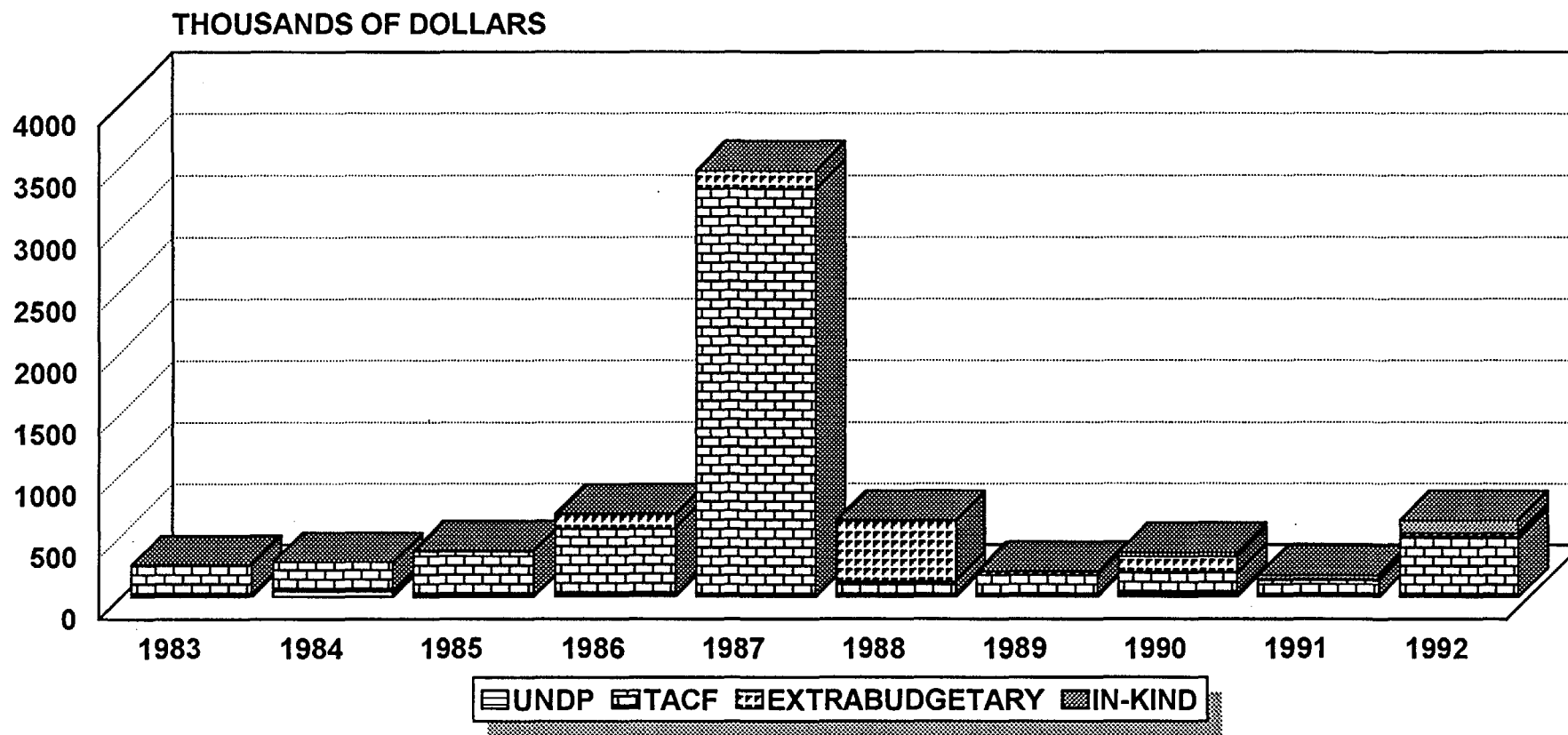
The country programme summary reported on here is one in the series of such studies being undertaken of the Agency's TC programme with Member States. With \$10.9 million of Agency support received, Hungary ranks 11<sup>th</sup> among all recipients of technical assistance during the period 1958 through 1992, and even ranked first in one year, 1987.

The bulk of the assistance received during the past ten years has been provided in the form of equipment (82%), while training and expert services only accounted for 15% and 3%, respectively. A similar picture emerges with regard to resources: by far the largest share of funds was made available through the TACF (82%) -- utilizing over \$3.6 million of NCC -- the remainder was provided through extrabudgetary contributions (14%), assistance in kind (3%) and UNDP (1%).

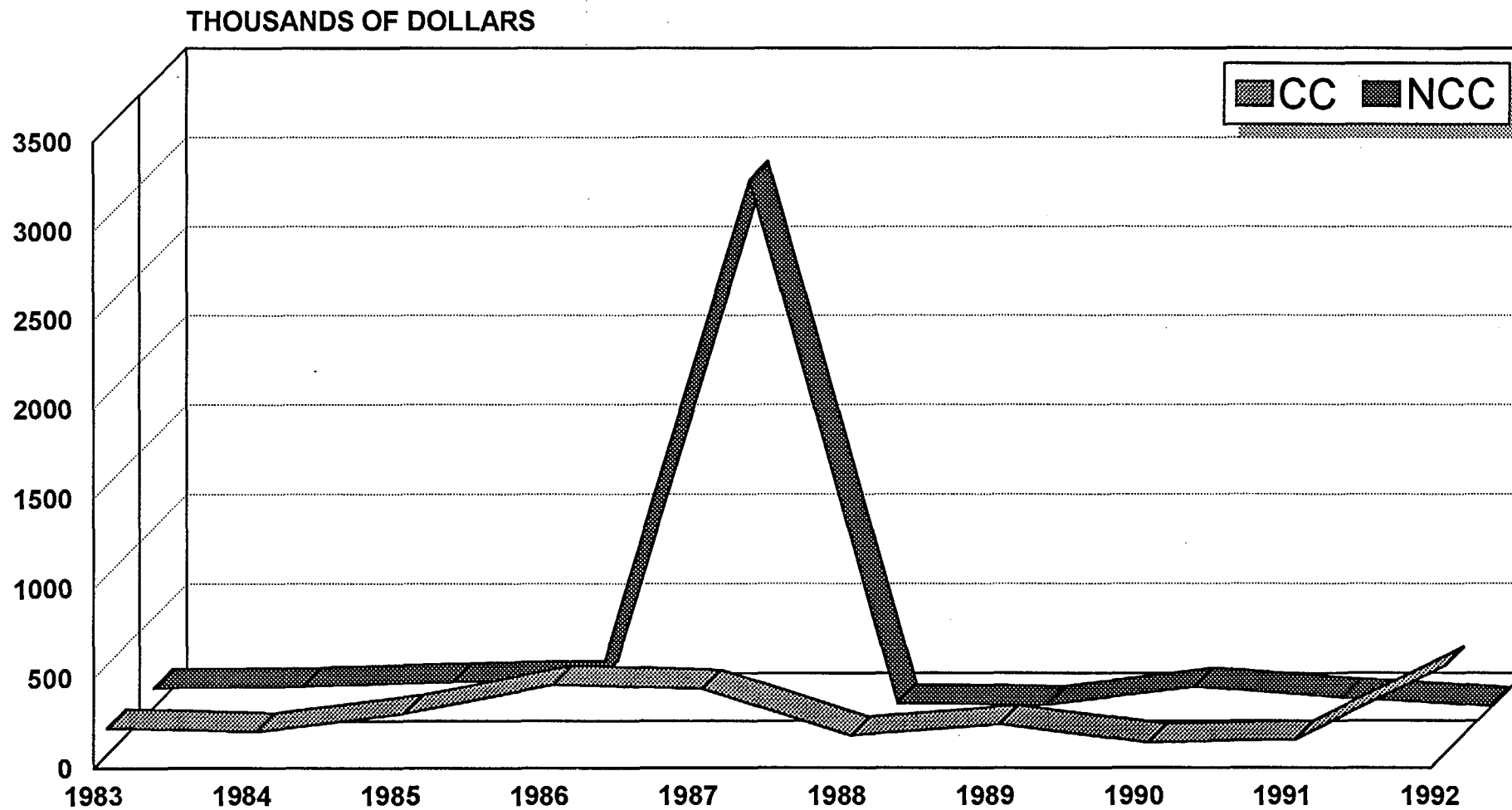
As regards total disbursements, by sector, under all projects that were operational during the period 1983 through mid-December 1993, the lion's share went to nuclear engineering and technology (79%), with two large scale projects -- Installation of a cyclotron laboratory at the Institute of Nuclear Research in Debrecen (\$2 million); and Modernization of the research reactor at the Central Research Institute for Physics in Budapest (\$3.3 million). The remaining funds were distributed as follows: industry and hydrology (7%), nuclear physics and chemistry (6%), nuclear safety (5%) agriculture (2%) and general atomic energy development (1%).

During the same period, 1983 through mid-December 1993, Hungary has made a significant contribution to the Agency's TC programme, by providing experts and training course lecturers for over 450 assignments, and hosting 334 fellowships and scientific visits as well as 17 regional and interregional training courses with a total of 282 participants.

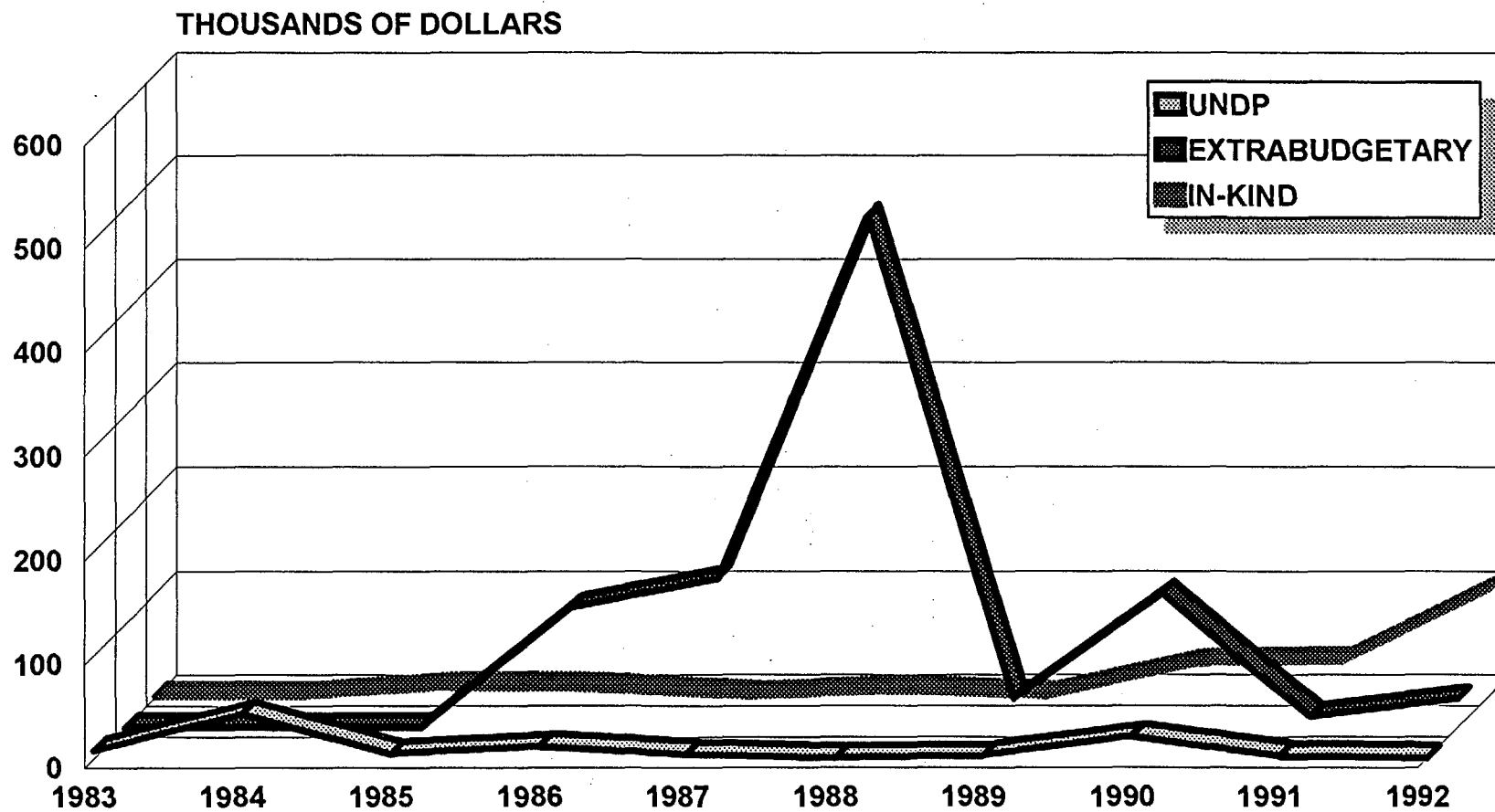
# ASSISTANCE PROVIDED BY THE AGENCY TO HUNGARY BY SOURCE (1983 - 1992)



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

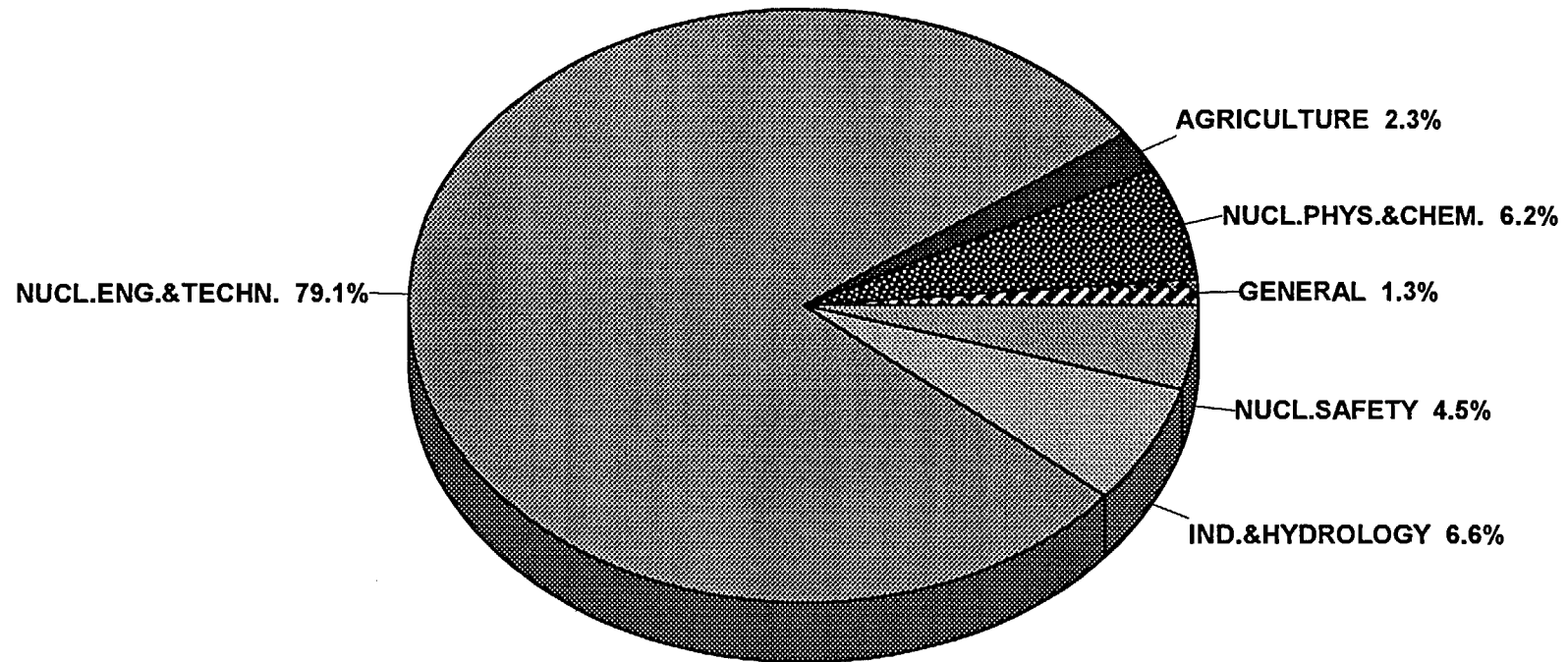


# UNDP, EXTRABUDGETARY AND IN - KIND ASSISTANCE PROVIDED TO HUNGARY (1983 - 1992)

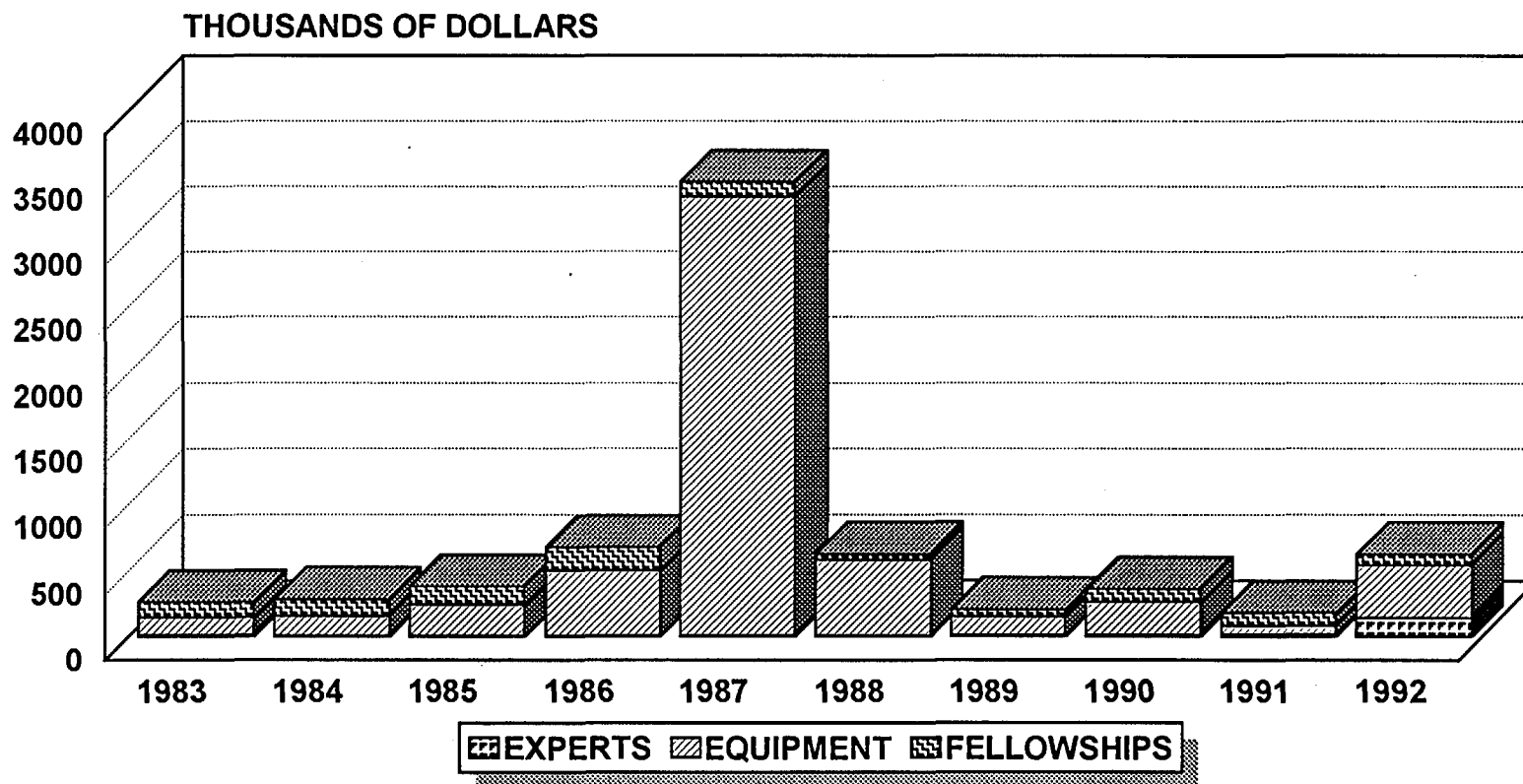




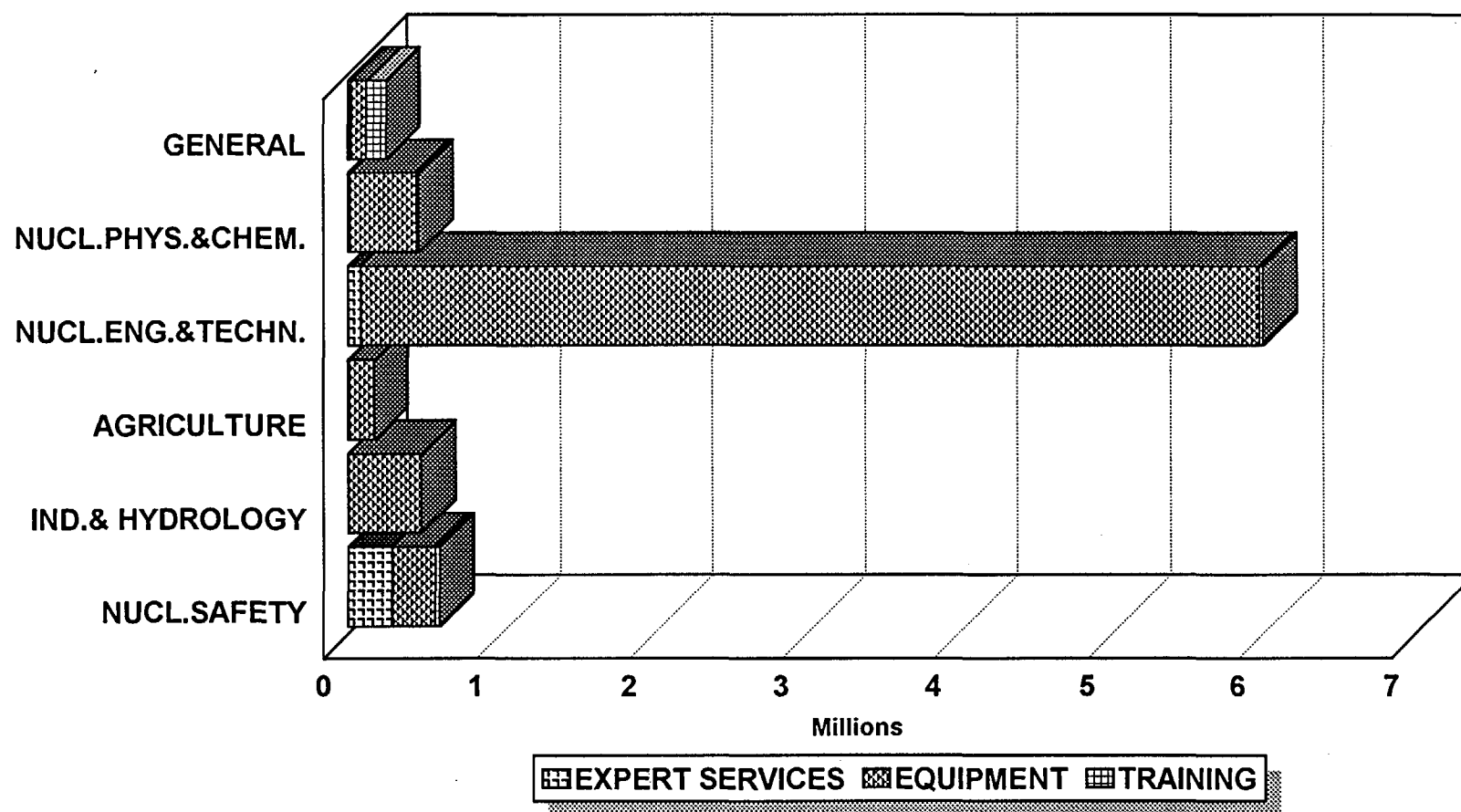
# TC PROJECT DISBURSEMENTS IN HUNGARY BY SECTOR (1983 - 1993)



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



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



THE AGENCY'S TECHNICAL CO-OPERATION PROGRAMME WITH HUNGARY

ALL SOURCES

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

YEAR	RANKING	AMOUNT
1958-82	13 <sup>th</sup>	3890.4
1983	30 <sup>th</sup>	257.7
1984	25 <sup>th</sup>	279.8
1985	22 <sup>nd</sup>	373.8
1986	16 <sup>th</sup>	669.0
1987	1 <sup>st</sup>	3452.6
1988	11 <sup>th</sup>	620.0
1989	51 <sup>st</sup>	203.1
1990	39 <sup>th</sup>	356.3
1991	59 <sup>th</sup>	176.6
1992	21 <sup>st</sup>	618.9
1958-92	11 <sup>th</sup>	10898.2

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

**ALL SOURCES**

Year	I	II	III	IV	V	HUNGARY
1958-82	BRA 8507.3	IND 6849.4	ARG 5528.2	PAK 5492.7	CHI 5240.1	13 <sup>th</sup> - 3890.4
1983	EGY 2077.9	PER 1116.8	VIE 948.1	PHI 778.6	IRA 722.1	30 <sup>th</sup> - 257.7
1984	EGY 3625.9	PER 1750.4	THA 1094.6	CUB 1028.7	PHI 881.2	25 <sup>th</sup> - 279.8
1985	EGY 2494.8	PER 1120.7	THA 1117.4	BGD 1068.2	PHI 963.7	22 <sup>nd</sup> - 373.8
1986	EGY 2317.0	BRA 1452.9	THA 1169.4	POL 1050.3	BGD 896.4	16 <sup>th</sup> - 669.0
1987	HUN 3452.6	EGY 1775.4	THA 1742.4	INS 1312.5	YUG 1223.2	1 <sup>st</sup> - 3452.6
1988	EGY 1486.9	BUL 1361.6	CPR 1278.5	THA 1158.7	BRA 1096.7	11 <sup>th</sup> - 620.0
1989	CPR 1542.3	EGY 1505.1	THA 1205.3	BRA 1096.5	INS 999.1	51 <sup>st</sup> - 203.1
1990	POL 2308.1	CPR 2005.0	VIE 1589.2	INS 1412.6	BRA 1229.1	39 <sup>th</sup> - 356.3
1991	INS 1305.2	CPR 975.0	EGY 959.8	BRA 951.2	BUL 934.7	59 <sup>th</sup> - 176.6
1992	EGY 1586.3	INS 1342.1	CPR 1328.8	MEX 1127.8	POL 1036.4	21 <sup>st</sup> - 618.9
1958-92	EGY 23808.6	BRA 17736.8	THA 15332.0	INS 13725.9	PER 13129.6	11 <sup>th</sup> - 10898.2

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

**TECHNICAL ASSISTANCE AND CO-OPERATION FUND**

Year	I	II	III	IV	V	HUNGARY
1958-82	HUN 2971.7	EGY 2405.8	PAK 2340.5	THA 2000.3	BRA 1983.5	1 <sup>st</sup> - 2971.7
1983	EGY 1049.4	VIE 897.4	POL 667.8	PAK 498.5	PHI 430.0	20 <sup>th</sup> - 249.9
1984	EGY 1197.2	CUB 655.6	ECU 565.6	BGD 506.3	BUL 472.4	25 <sup>th</sup> - 236.8
1985	BGD 991.8	VIE 745.0	THA 708.7	BRA 571.8	POR 538.7	16 <sup>th</sup> - 360.0
1986	BRA 1381.8	THA 871.9	POL 833.5	BGD 823.9	SYR 751.8	14 <sup>th</sup> - 534.9
1987	HUN 3305.2	DRK 986.8	BUL 888.5	INS 885.8	EGY 878.9	1 <sup>st</sup> - 3305.2
1988	BUL 1195.6	PER 856.5	EGY 768.6	INS 751.7	MAL 656.0	53 <sup>rd</sup> - 122.0
1989	EGY 990.9	CPR 868.2	POR 769.6	CHI 756.9	MAL 619.4	51 <sup>st</sup> - 172.4
1990	POL 1562.3	VIE 1518.8	DRK 1156.2	IRA 958.0	YUG 933.4	50 <sup>th</sup> - 173.9
1991	BUL 893.1	PAK 868.8	INS 855.1	VIE 817.6	CPR 814.5	60 <sup>th</sup> - 129.7
1992	EGY 1255.7	CPR 1009.0	VIE 872.8	INS 826.6	IRA 795.5	28 <sup>th</sup> - 487.2
1958-92	EGY 10847.0	HUN 8743.7	POL 8486.4	VIE 8199.9	PAK 8115.6	2 <sup>nd</sup> - 8743.7

ASSISTANCE PROVIDED BY THE AGENCY TO HUNGARY

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	8.0	138.0	111.7	-	-	257.7	7.8	145.9	104.0	-	-	257.7
1984	4.3	151.3	124.2	-	-	279.8	43.0	123.3	113.5	-	-	279.8
1985	2.8	238.0	133.0	-	-	373.8	4.3	224.1	135.9	-	9.5	373.8
1986	3.2	494.6	171.2	-	-	669.0	11.4	383.3	151.6	115.5	7.2	669.0
1987	1.4	3 333.0	118.2	-	-	3 452.6	3.7	360.4	2 944.8	143.7	-	3 452.6
1988	2.9	572.8	44.3	-	-	620.0	0.5	102.1	19.9	492.0	5.5	620.0
1989	8.5	142.5	52.1	-	-	203.1	2.8	165.3	7.1	27.9	-	203.1
1990	10.2	251.9	94.2	-	-	356.3	21.5	64.5	109.4	129.4	31.5	356.3
1991	11.5	69.9	95.2	-	-	176.6	2.6	79.7	50.0	9.9	34.4	176.6
1992	139.5	397.0	82.4	-	-	618.9	-	487.2	-	28.0	103.7	618.9
1983-92	192.3	5 789.0	1 026.5	-	-	7 007.8	97.6	2 135.8	3 636.2	946.4	191.8	7 007.8

TECHNICAL CO-OPERATION PROJECTS IN HUNGARY  
BY SECTOR

PROJECTS COMPLETED AND OPERATIONAL 1983 - 1993

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

SECTOR	NO. OF PROJECTS	ALLOTMENTS \$	% OF TOTAL	DISBURSEMENTS \$	% OF TOTAL
General atomic energy development	2	248 650	3.1	100 212	1.3
Nuclear physics and chemistry	3	464 477	5.9	464 477	6.2
Nuclear raw materials	-	-	-	-	-
Nuclear engineering and technology	8	5 995 162	75.3	5 924 112	79.1
Nuclear techniques in agriculture	2	171 295	2.2	170 193	2.3
Nuclear medicine	-	-	-	-	-
Nuclear techniques in biology	-	-	-	-	-
Nuclear techniques in industry and hydrology	2	480 187	6.0	495 713	6.6
Nuclear safety	10	598 819	7.5	334 748	4.5
TOTAL	27	7 958 590	100.0	7 489 455	100.0



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

Sector	No. of projects	Total project allotments \$	Total project disbursements \$
<u>Completed projects</u>			
General atomic energy development	-	-	-
Nuclear physics and chemistry	3	464 477	464 477
Nuclear raw materials	-	-	-
Nuclear engineering and technology	5	5 687 615	5 632 893
Nuclear techniques in agriculture	2	171 295	170 193
Nuclear medicine	-	-	-
Nuclear techniques in biology	-	-	-
Nuclear techniques in industry & hydrology	2	480 187	495 713
Nuclear safety	3	117 335	94 027
TOTAL	15	6 920 909	6 857 303
<u>Operational projects</u>			
General atomic energy development	2	248 650	100 212
Nuclear physics and chemistry	-	-	-
Nuclear raw materials	-	-	-
Nuclear engineering and technology	3	307 547	291 219
Nuclear techniques in agriculture	-	-	-
Nuclear medicine	-	-	-
Nuclear techniques in biology	-	-	-
Nuclear techniques in industry & hydrology	-	-	-
Nuclear safety	7	481 484	240 721
TOTAL	12	1 037 681	632 152

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

FIELD	TOTAL PROJECT ALLOTMENTS				TOTAL PROJECT DISBURSEMENTS			
	EXPERT SERVICES		EQUIPMENT	TRAINING	EXPERT SERVICES		EQUIPMENT	TRAINING
	M/M	\$	\$	\$	M/M	\$	\$	\$
General atomic energy development	1/11	19 050	100 000	129 600	1/00	15 290	80 632	4 290
Nuclear physics and chemistry	1/09	11 810	434 576	18 091	1/09	11 810	434 576	18 091
Nuclear raw materials	-	-	-	-	-	-	-	-
Nuclear engineering and technology	8/16	79 147	5 892 099	23 916	6/15	58 384	5 842 150	23 578
Nuclear techniques in agriculture	0/27	8 174	163 121	-	0/21	8 174	162 019	-
Nuclear medicine	-	-	-	-	-	-	-	-
Nuclear techniques in biology	-	-	-	-	-	-	-	-
Nuclear techniques in industry & hydrology	-	-	480 187	-	-	-	495 713	-
Nuclear safety	28/07	287 940	280 280	30 599	17/14	79 446	237 759	17 543
TOTAL	40/10	406 121	7 350 263	202 206	26/29	173 104	7 252 849	63 502

AGENCY FELLOWS FROM HUNGARY

1983 - 1993<sup>1</sup>  
(As of mid-December 1993)

Sector	No. of fellowships	No. of months/days	Host countries
General atomic energy development	13	48/01	NET, GER, BEL, USA, IAEA
Nuclear physics	18	87/26	FRA, GER, NET, USA, SWE, UKR, IAEA
Nuclear chemistry	15	46/05	DEN, GER, FIN, USA, UK, IAEA
Nuclear raw materials	-	-	-
Nuclear engineering and technology	40	103/18	NET, SWE, ITA, GER, BEL, AUS, FIN, SPA, INS, VIE, IND, USA, FRA, UK, USSR
Nuclear techniques in agriculture	13	36/19	SWI, NET, GER, AUS, CAN, USA, UK, IAEA
Nuclear medicine	12	96/29	GER, CAN, USA, ISR, UK
Nuclear techniques in biology	2	1/22	BEL, NET, UK
Nuclear techniques in industry and hydrology	8	20/07	DEN, GER, NET, POL, UK, IAEA
Nuclear safety	51	225/08	CAN, FRA, CZE, GER, AUS, USA, BEL, NET, ITA, FIN, IND, SWE, MEX, DEN, SAF, SPA, UK, IAEA
TOTAL	172	666/15	

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

HUNGARY  
LONG-TERM FELLOWSHIPS  
1983 - 1993  
(As of mid-December 1993)

Name	Field of study		Host country	Date	Duration	Project
BODY	Nuclear data processing	0J	IAEA	Sep.84 - Dec.85	15/04	INT/1/018
SAFAR	Nuclear materials management	0C	IAEA	Jan.87 - Jan.88	12/01	-
DEZSO	Analytical nuclear physics	1L	UK	Jun.83 - Jun.84	12/10	-
GLOECKLER	Reactor physics	1F	USA	Jan.86 - Jan.87	12/01	-
HORDOSY	Plasma transport	1H	NET	Feb.88 - Jan.89	12/00	-
KEREKES	Environment radiation biology	1I	SWE	Jan.87 - Jan.88	12/02	-
KIRALY	Plasma physics	1H	USA	Nov.83 - Jan.85	15/00	-
PETO	Radiometry and dosimetry	1K	USA	Sep.86 - Sep.87	12/00	-
PETRAVICH	Plasma physics	1H	USA	Started: Oct.92	14/15	RER/0/005
KLIVENYI	Production of radiopharmaceuticals	2G	GER	Mar.87 - Mar.88	12/01	HUN/4/004
VAJDA	Nuclear analytical chemistry	2C	IAEA	Jun.90 - Oct.91	15/28	RER/0/003
BESSENYEI	Computerized reactor control	4G	ITA	May 85 - May 86	12/02	-
HEGYI	Reactor kinetics	4D	SWE	Feb.84 - Mar.85	12/12	-

HUNGARY  
LONG-TERM FELLOWSHIPS  
1983 - 1993  
(As of mid-December 1993)

Name	Field of study		Host country	Date	Duration	Project
TARKANYI	Isotope production	4H	GER	Apr.86 - Jul.87	15/00	-
VASARHELYI	Membrane technology	4F	NET	Mar.85 - Mar.86	12/01	-
VEGH	Radiation damage	4K	NET	Sep.83 - Nov.84	14/25	-
CSEJTEI	Radiotherapy	6C	GER	Oct.84 - Sep.85	12/00	HUN/4/004
DEVENYI	Nuclear medicine	6B	UK	Nov.84 - May 86	17/28	-
KOVACS, Z.	Radiopharmacy	6G	GER	May 83 - May 84	13/00	HUN/4/004
MANN	Radioimmunoassay	6B	UK	Nov.83 - May 85	18/00	-
PERLAKY	Radiotherapy research	6D	USA	Sep.86 - Sep.87	12/00	-
DEAK	Isotopes in hydrology	80	GER	Nov.84 - Jan.86	14/00	-
BALASHAZY	Radiation protection	9C	USA	Jul.87 - Aug.88	13/01	-
BERCI	Waste disposal	9E	FIN	Sep.85 - Aug.86	12/00	-
CZAKO	Safety assessment techniques	9F	GER	May 90 - Dec.91	18/03	RER/0/005
DROZDA	Waste management	9E	BEL	May 85 - May 86	12/01	-

**HUNGARY**  
**LONG-TERM FELLOWSHIPS**  
**1983 - 1993**  
**(As of mid-December 1993)**

Name	Field of study	Host country	Date	Duration	Project
HOZER	Reactor safety 9D	FRA	May 90 - May 91	12/01	RER/0/003
KELEMEN	Safety evaluation 9F	GER	Nov.91 - Oct.92	12/00	RER/0/005
LANCSARICS	Environmental monitoring 9C	GER	Sep.83 - Oct.84	13/00	-
NAMENYI	Inhalation toxicology 9C	USA	Apr.86 - May 87	13/00	-
SZABO	Environmental radiation protection 9G	UK	Jun.88 - May 89	12/00	-
URAY	Radiation protection 9C	GER	Jan.83 - Jul.84	18/02	HUN/4/004
ZOMBORI	Environmental analysis 9C	AUS IAEA GER	Apr.84 - Apr.85	12/03	-

HUNGARIAN NATIONALS WHO WERE AWARDED MORE THAN ONE  
FELLOWSHIP OR SCIENTIFIC VISIT  
1983 - 1993  
(As of mid-December 1993)

Name	Field of study	Host country	Date	Duration	Project	
BIBOK	1. Automatic controls	4G	NET	Nov.83 - Dec.83	2/00	HUN/4/004
	2. Radioisotope production	4H	GER	Apr.85 - May 85	0/11	HUN/4/004
	3. Cyclotron operation	4H	GER	Jun.86	0/12	HUN/4/004
FOLDIAK	1. Radiation chemistry	2D	GER DEN UK	Jan.85	0/15	HUN/1/006
	2. Radiation chemistry	2D	USA	Jul.87 - Aug.87	0/15	HUN/1/006
GAZSO	1. Somatic effects of radiation	7C	UK	Jun.87 - Jul.87	0/26	-
	2. Radiation processing	8H	POL NET	Jan.93	0/13	RER/0/005
GYOERGY	1. Radiation chemistry	2D	UK	Apr.89	0/12	fHUN/1/008
	2. Radiation chemistry	2D	GER	May 91	0/11	HUN/1/008
KEOEMLEY	1. Reactor engineering/training	4D	UK AUS GER	Sep.86 - Oct/86	0/26	-
	2. Administration in nuclear fields	0G	USA	Jun.93 - Jul.93	0/19	HUN/0/002
KOVACS, A.V.	1. Radiation processing	8H	DEN	Apr.84 - Jul.84	3/01	HUN/1/006
	2. Acceleration technology	8H	DEN NET UK	Oct.84 - Nov.84	0/15	HUN/1/006
KOVACS, Z.	1. Radiopharmacy	6G	GER	May 83 - May 84	13/00	HUN/4/004
	2. Radioisotope production	4H	GER BEL	Sep.86 - Oct.86	0/12	HUN/4/004

HUNGARIAN NATIONALS WHO WERE AWARDED MORE THAN ONE  
FELLOWSHIP OR SCIENTIFIC VISIT  
1983 - 1993  
(As of mid-December 1993)

Name	Field of study		Host country	Date	Duration	Project
LANG, E.	1. Environmental monitoring	9C	USA	Aug.85 - Feb.86	6/01	-
	2. Environmental protection	9G	GER	Mar.92 - Sep.92	6/01	HUN/9/011
MAROTI	1. Reactor safety	9D	ITA	Feb.85	0/05	fRER/9/002
	2. Reactor heat transfer	4D	GER	May 86	0/05	HUN/4/005
NAMENYI	1. Inhalation toxicology	9C	USA	Apr.86 - May 87	13/00	-
	2. Radiation protection	9C	UK	Dec.91	0/12	RER/0/005
ROSTA	1. Neutron physics	1E	FRA	Nov.85 - Aug.86	2/00	HUN/4/006
	2. Solid state physics	1G	FRA	Nov.89 - Jul.90	1/00	RER/0/003
TAKACS	1. Analytical nuclear physics	1L	FRA	Nov.83 - Jan.84	2/00	HUN/4/004
	2. Charged particle act. analysis	1L	NET	Mar.87 - May 87	1/12	HUN/4/004
TOTH, I.	1. Nuclear safety	9D	USA	Apr.85	0/09	RER/9/002
	2. Reactor physics	1F	GER FRA	Sep.89 - Oct.89	0/16	RER/9/002
TRAMPUS	1. Reactor technology	4D	FIN	Sep.89	0/05	HUN/4/009
	2. Reactor technology	4D	USA	Nov.91	0/11	HUN/4/009
URAY	1. Radiation protection	9C	GER	Jan.83 - Jul.84	18/02	HUN/4/004
	2. Neutron dosimetry	9C	UK	Aug.86 - Sep.86	0/11	HUN/4/004
VALEK	1. Radioisotope production	4A	GER	Apr.85 - May 85	0/11	HUN/4/004
	2. Cyclotron operation	4H	GER	Jun.86	0/12	HUN/4/004



HUNGARIAN NATIONALS WHO WERE AWARDED MORE THAN ONE  
FELLOWSHIP OR SCIENTIFIC VISIT  
1983 - 1993  
(As of mid-December 1993)

Name	Field of study	Host country	Date	Duration	Project
VAMOS	1. NPP safety in operation	9D	USA FRA	3/21 0/16	-
	2. NPP operational safety	9F			
VOROSS	1. Probabilistic risk assessment	9F	IND MEX	0/12 0/19	INT/9/063 INT/9/065
	2. Reactor safety	9D			
ZSOLNAY	1. NPP safety evaluation	9F	NET NET	0/26 1/00	-
	2. Nuclear instrumentation, electronics and reactor control	4G			
	3. Reactor physics	1F	NET USA	2/01 0/19	RER/0/005 HUN/0/002
	4. Administration in nuclear fields	0G			

AGENCY TRAINING COURSES WITH HUNGARIAN PARTICIPATION

1983 - 1993  
(As of mid-December 1993)

Field	Number of participants	Number of courses
General atomic energy development	16	8
Nuclear physics	5	5
Nuclear chemistry	4	3
Nuclear raw materials	1	1
Nuclear engineering and technology	60	31
Nuclear techniques in agriculture	10	8
Nuclear medicine	3	3
Nuclear techniques in biology	1	1
Nuclear techniques in industry & hydrology	3	3
Nuclear safety	69	47
TOTAL	172	110

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

Name	Course No.	Course title	Year	Location
BULYGO	RER/4/002 (006)	RWS on WWER 440/1000 steam-generator in-service inspection	1990	YUG
	RER/4/002 (007)	RWS and on-the-job training on NDT, audits and erosion-corrosion of RPV and piping of WWER-type reactors	1990	SPA
DOERFNER	INT/4/072 (001)	ITC on electric system expansion planning	1985	USA
	INT/4/083 (001)	ITC on electricity demand forecasting in nuclear power planning	1986	USA
FICHTINGER	INT/9/078 (001)	ITC on safe operation of NPPs	1987	POL FIN CZE CZE
	INT/9/095 (001)	ITC on safety in NPP operation with PWR/WWER	1989	
GERGELY	INT/4/080 (001)	ITC on quality assurance in NPP operation	1985	GFR
	INT/9/118 (001)	ITC on evaluation and feedback of safety-related experience in NPP operation	1991	USA CAN
HARGITTAI	RER/5/003 (002)	RWS on food irradiation technology	1988	POL
	RER/5/003 (004)	RWS on the use of electron accelerators for food irradiation	1991	POL
HORVATH	INT/9/113 (001)	ITC on safety in NPP operation: prevention and management of accidents	1991	USA
	RER/9/004 (001)	Regional working group on source term code package for WWER-type reactors (STCP)	1989	USSR
KELEMEN	INT/9/084 (001)	ITC on probabilistic safety assessment in NPP operation	1988	USA
	INT/9/102 (001)	ITC on probabilistic safety assessment (PSA) for NPP safety	1989	USSR

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

Name	Course No.	Course title	Year	Location
MUCKSAI	INT/4/062 (001)	ITC on the control and instrumentation of NPPs	1983	GFR
	INT/4/084 (001)	ITC on qualification of operational personnel	1986	GFR
	INT/9/086 (001)	ITC on safety in NPP operation	1988	USA
	RER/4/002 (002)	RWS on in-service inspection standards plus QA	1989	CAN
	RER/4/003 (003)	Third RWS on in-service inspection - programme and design procedures	1991	SPA
STYEVKO	RER/5/003 (002)	RWS on food irradiation technology	1988	POL
	RER/5/003 (004)	RWS on the use of electron accelerators for food irradiation	1991	POL
SZABO, D.	RER/4/002 (007)	RWS and on-the-job training on NDT, audits and erosion-corrosion of RPV and piping of WWER-type reactors	1990	SPA
	RER/4/003 (002)	Second RWS on in-service inspection - programme and design procedures	1991	SPA
SZERFENYI	INT/0/031 (001)	ITC on nuclear power planning and feasibility studies	1983	FRA
	INT/0/041 (001)	ITC on nuclear power planning and feasibility studies	1986	FRA
SZIKSZAI	INT/9/078 (001)	ITC on safe operation of NPPs	1987	POL
	INT/9/101 (001)	ITC on safety in NPP operation	1989	FIN
	INT/9/125 (001)	ITC on the use of PSA in the operation of NPPs: risk-based prioritization of operational tasks	1992	CZE FRA USA
SZONYI	INT/9/051 (001)	ITC on safety analysis	1984	GFR
	INT/9/075 (001)	ITC on safe transport of radioactive materials	1987	UK
	INT/9/118 (001)	ITC on evaluation and feedback of safety-related experience in NPP operation	1991	USA CAN
TAKATS	INT/9/044 (001)	ITC on waste management	1983	GFR
	INT/9/068 (001)	ITC on management and disposal of radioactive wastes	1986	CAN

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

Name	Course No.	Course title	Year	Location
TARNAI	RER/4/003 (001)	RWS on in-service inspection - programme and design procedures	1991	SPA
	RER/4/003 (002)	Second RWS on in-service inspection - programme and design procedures	1991	SPA
TECHY	INT/9/043 (001)	ITC on probabilistic methods applied to safety analysis	1983	USA
	RER/9/004 (001)	Regional working group on source term code package for WWER-type reactors (STPC)	1989	USSR
TOTH, Z.F.	INT/4/091 (001)	ITC on NPP control and instrumentation	1987	GFR
	RER/4/002 (003)	RWS on eddy current techniques - practical approach	1989	YUG
TRAMPUS	RER/4/002 (002)	RWS in in-service inspection standards plus QA	1989	SPA
	RER/4/002 (005)	Regional on-the-job training course in eddy current inspection of steam generator tubes on WWER-440-type NPP	1989	BUL
	RER/4/002 (007)	RWS and on-the-job training on NDT, audits and erosion-corrosion of RPV and piping of WWER-type reactors	1990	SPA
	RER/4/002 (008)	Regional on-the-job training course on in-service inspection of Krsko NPP	1990	YUG
	RER/4/003 (001)	RWS on in-service inspection - programme and design procedures	1991	SPA
	RER/4/003 (002)	Second RWS on in-service inspection - programme and design procedures	1991	SPA
	RER/4/003 (003)	Third RWS on in-service inspection - programme and design procedures	1991	SPA
TURI	INT/4/107 (001)	ITC on control and instrumentation of NPPs	1991	GER
	RER/4/003 (001)	RWS on in-service inspection - programme and design procedures	1991	SPA
VINCZE	RER/4/002 (002)	RWS on in-service inspection standards plus QA	1989	SPA
	RER/4/002 (006)	RWS on WWER 440/1000 steam-generator in-service inspection	1990	YUG
VIRAG	INT/0/047 (001)	ITC on electric system expansion planning (WASP)	1989	USA
	INT/0/054 (001)	ITC on integrated energy and electricity planning for nuclear power development with emphasis on ENPEP	1992	USA

PROJECTS COMPLETED IN HUNGARY SINCE 1983  
(As of mid-December 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1982	HUN/1/006	Establishment of an automated radiation laboratory	0/21	5 430	55 683	9 763	0/21	5 430	55 683	9 763	1987
1987	HUN/1/008	Strengthening of an advanced automated radiation laboratory	0/18	6 380	12 232	8 328	0/18	6 380	12 232	8 328	1992
1987	HUN/2/002	Chemical and biochemical research	-	-	366 661	-	-	-	366 661	-	1989
1979	HUN/4/004	Cyclotron laboratory	0/29	6 247	2 005 150	-	0/29	2 069	1 956 681	-	1988
1985	HUN/4/005	Thermohydraulic loop experiments	1/00	6 900	91 800	-	0/18	5 161	91 720	-	1987
1985	HUN/4/006	Reactor modernization	-	-	3 335 603	2 600	-	-	3 334 105	2 615	1990
1987	HUN/4/007	Production of Cobalt-60 sources	0/24	5 640	200 175	2 655	0/24	7 122	200 273	2 302	1991
1988	HUN/4/008	Procurement assistance for Hungary <sup>1/</sup>	-	-	30 845	-	-	-	30 845	-	1991

<sup>1/</sup> Funds-in-Trust

PROJECTS COMPLETED IN HUNGARY SINCE 1983  
(As of mid-December 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS				COMPLETED
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING	
			M/M	\$	\$	\$	M/M	\$	\$	\$	
1981	HUN/5/011	Agricultural residue studies	-	-	51 000	-	-	-	49 898	-	1986
1989	HUN/5/012	Radioactive contamination and food control	0/27	8 174	112 121	-	0/21	8 174	112 121	-	1992
1984	HUN/8/005	Nuclear techniques in glass technology	-	-	40 000	-	-	-	40 797	-	1986
1985	HUN/8/006	Food irradiation technology	-	-	440 187	-	-	-	454 916	-	1990
1983	HUN/9/007	Computational safety analysis	3/00	18 600	15 000	-	3/07	5 825	15 762	-	1984
1986	HUN/9/009	Environmental radioactivity	-	-	24 000	-	-	-	24 226	-	1987
1991	HUN/9/012	OSART follow-up visit to Paks NPP	6/06	57 375	-	2 360	6/05	46 397	-	1 817	1992
	TOTAL	15 Projects	14/05	114 746	6 780 457	25 706	13/23	86 558	6 745 920	24 825	

**OPERATIONAL PROJECTS IN HUNGARY**  
(As of mid-December 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS			
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING
			M/M	\$	\$	\$	M/M	\$	\$	\$
1991	HUN/0/002	Establishing university courses in nuclear engineering	1/11	19 050	100 000	-	1/00	15 290	80 632	-
1993	HUN/0/003	Manpower development	-	-	-	129 600	-	-	-	4 290
1989	HUN/4/009	In-service inspection	0/19	5 130	228 526	18 661	0/24	7 947	228 526	18 661
1992	HUN/4/010	Spent fuel storage technology	2/00	19 650	-	-	2/00	28 045	-	-
1993	HUB/4/011	Quality assurance in NPP operation	3/04	35 580	-	-	1/10	8 040	-	-
1991	HUN/9/010	Modernization of personnel dosimetry system	0/05	1 475	132 110	-	0/05	1 471	132 319	-
1991	HUN/9/011	Environmental radiation telemetry	0/28	8 260	50 170	15 726	1/00	3 324	50 170	15 726
1991	HUN/9/013	Training in management and analysis of severe accidents	2/28	33 480	-	-	2/28	8 335	-	-
1993	HUN/9/014	Enhancement of safety in NPP operation	10/00	114 000	-	-	3/02	9 711	-	-



**OPERATIONAL PROJECTS IN HUNGARY**  
(As of mid-December 1993)

STARTED	PROJECT NO.	TITLE	ALLOTMENTS				DISBURSEMENTS			
			EXPERTS		EQUIPMENT	TRAINING	EXPERTS		EQUIPMENT	TRAINING
			M/M	\$	\$	\$	M/M	\$	\$	\$
1993	HUN/9/015	Control of low- and intermediate-level radioactive waste	2/00	22 800	-	3 363	0/14	-	-	-
1993	HUN/9/017	Analysis of atmospheric pollutants by XRF and PIXE	1/00	10 350	59 000	9 150	0/13	4 383	15 282	-
1993	HUN/9/018	Nuclear safety review mission	2/00	21 600	-	-	-	-	-	-
	TOTAL	12 Projects	26/05	291 375	569 806	176 500	13/06	86 546	506 929	38 677

Footnote-a/ project not yet upgraded:

HUN/9/016      Countrywide environmental radiation monitoring database

**COUNTERPART INSTITUTIONS IN HUNGARY (I)**  
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>GENERAL ATOMIC ENERGY DEVELOPMENT</u>		
HUN/0/002	1. Technical University of Budapest, Institute of Nuclear Techniques, Budapest	CSOM KEOEMLEY
	2. National Atomic Energy Commission, Budapest	ELOE
HUN/0/003	National Atomic Energy Commission, Budapest	ELOE
<u>NUCLEAR PHYSICS AND CHEMISTRY</u>		
HUN/1/006	Hungarian Academy of Sciences, Institute of Isotopes, Budapest	STENGER SZEPESVARY
HUN/1/008	Hungarian Academy of Sciences, Institute of Isotopes, Budapest	FOLDIAK
HUN/2/002	Hungarian Academy of Sciences, Institute of Isotopes, Radiation Technology Department, Budapest	GUCZI
<u>NUCLEAR ENGINEERING AND TECHNOLOGY</u>		
HUN/4/004	Hungarian Academy of Sciences, Institute of Nuclear Research, Debrecen	BERENYI
HUN/4/005	Hungarian Academy of Sciences, Central Research Institute for Physics, Budapest	SZABADOS
HUN/4/006	Hungarian Academy of Sciences, Central Research Institute for Physics, Budapest	GYIMESI

**COUNTERPART INSTITUTIONS IN HUNGARY (I)**  
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR ENGINEERING AND TECHNOLOGY (cont'd)</u>		
HUN/4/007	1. Hungarian Academy of Sciences, Institute of Isotopes, Radiation Technology Department, Budapest	STENGER
	2. Hungarian Academy of Sciences, Central Research Institute for Physics, Budapest	GYIMESI
	3. Paks Nuclear Power Plant, Paks	MAROTI
HUN/4/008	1. Kossuth Lajos University, Institute of Experimental Physics, Debrecen	CSIKAI
	2. Koranyi National Institute of Pulmology, Budapest	KERTESZ
HUN/4/009	1. Iron and Steel Research and Development Enterprise, Budapest	SZUNYOGH
	2. Paks Nuclear Power Plant, Paks	TRAMPUS
	3. State Inspectorate for Energy and Safety, Budapest	MUCSKAI
HUN/4/010	Paks Nuclear Power Plant, Paks	BUDAY
HUN/4/011	Paks Nuclear Power Plant, Nuclear Safety Division, Quality Assurance Department, Paks	VINCZE RADVA
<u>AGRICULTURE</u>		
HUN/5/011	Hungarian Academy of Sciences, Institute of Isotopes, Budapest	HORVATH
HUN/5/012	Ministry of Agriculture, Veterinary and Food Control Centre, Department of Radiology, Budapest	KISS

**COUNTERPART INSTITUTIONS IN HUNGARY (I)**  
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR TECHNIQUES IN INDUSTRY AND HYDROLOGY</u>		
HUN/8/005	Research Institute for the Glass Industry, Department of Measuring Techniques, Budapest	PADAR
HUN/8/006	AGROSTER Joint Irradiation Development Co., Budapest	KALMAN
<u>NUCLEAR SAFETY</u>		
HUN/9/007	Hungarian Academy of Sciences, Central Research Institute for Physics, Budapest	-
HUN/9/009	National Atomic Energy Commission, Budapest	-
HUN/9/010	Frederic Joliot-Curie National Research Institute for Radiobiology and Radiohygiene, Budapest	BOJTOR
HUN/9/011	1. Hungarian Academy of Sciences, Central Research Institute for Physics, Budapest 2. Meteorological Service of the Hungarian Republic, Budapest	DEME FEHER  SIMON ROEVID
HUN/9/012	Paks Nuclear Power Plant, Paks	LASZLO
HUN/9/013	Institute for Electrical Power Research, Budapest	VOROSS TAUBNER
HUN/9/014	1. Institute for Electrical Power Research, Nuclear and Power Engineering Division, Budapest 2. Hungarian Academy of Sciences, Central Research Institute for Physics, Budapest 3. Paks Nuclear Power Plant, Research and Development Department, Paks	HOLLO  SZABADOS  KATONA

**COUNTERPART INSTITUTIONS IN HUNGARY (I)**  
(By Project)

<u>Project No.</u>	<u>Institute</u>	<u>Counterpart(s)</u>
<u>NUCLEAR SAFETY (cont'd)</u>		
HUN/9/015	1. Paks Nuclear Power Plant, Radiation Protection Department, Paks	ORMAI
	2. National Atomic Energy Commission, Budapest	ELOE
	3. EROETERV Power Station and Network Engineering Co., Budapest	BERCI
	4. Technical University of Budapest, Physical Chemistry Department, Budapest	SOLYMOSY
	5. Hungarian Academy of Sciences, Institute of Nuclear Research, Debrecen	HERTELENDI
HUN/9/017	Hungarian Academy of Sciences, Central Research Institute for Physics, Budapest	TOROK SANDOR
HUN/9/018	1. National Atomic Energy Commission, Budapest	ELOE
	2. Paks Nuclear Power Plant, Paks	LASZLO

**COUNTERPART INSTITUTIONS IN HUNGARY (II)**  
(By Institute)

**BUDAPEST**

**National Atomic Energy Commission**  
**Budapest**

HUN/0/002	Establishing University Courses in Nuclear Engineering
HUN/0/003	Manpower Development
HUN/9/009	Environmental Radioactivity
HUN/9/015	Control of Low- and Intermediate-Level Radioactive Waste
HUN/9/018	Nuclear Safety Review Mission

**Hungarian Academy of Sciences**  
**Institute of Isotopes**  
**Budapest**

HUN/1/006	Establishment of an Automated Radiation Laboratory
HUN/1/008	Strengthening of an Advanced Automated Radiation Laboratory
HUN/5/011	Agricultural Residue Studies

**Hungarian Academy of Sciences**  
**Institute of Isotopes**  
**Radiation Technology Department**  
**Budapest**

HUN/2/002	Chemical and Biochemical Research
HUN/4/007	Production of Cobalt-60 Sources

**Hungarian Academy of Sciences**  
**Central Research Institute for Physics**  
**Budapest**

HUN/4/005	Thermohydraulic Loop Experiments
HUN/4/006	Reactor Modernization
HUN/4/007	Production of Cobalt-60 Sources
HUN/9/007	Computational Safety Analysis
HUN/9/011	Environmental Radiation Telemetry
HUN/9/014	Enhancement of Safety in NPP Operation
HUN/9/017	Analysis of Atmospheric Pollutants by XRF and PIXE

**COUNTERPART INSTITUTIONS IN HUNGARY (II)**  
(By Institute)

**BUDAPEST** (cont'd)

**Technical University of Budapest  
Institute of Nuclear Techniques  
Budapest**

HUN/0/002      Establishing University Courses in Nuclear Engineering

**Technical University of Budapest  
Physical Chemistry Department  
Budapest**

HUN/9/015      Control of Low- and Intermediate-Level Radioactive Waste

**Koranyi National Institute of Pulmology  
Budapest**

HUN/4/008      Procurement Assistance for Hungary

**Iron and Steel Research and Development Enterprise  
Budapest**

HUN/4/009      In-Service Inspection

**State Inspectorate for Energy and Safety  
Budapest**

HUN/4/009      In-Service Inspection

**Ministry of Agriculture  
Veterinary and Food Control Centre  
Department of Radiobiology  
Budapest**

HUN/5/012      Radioactive Contamination and Food Control

**Research Institute for the Glass Industry  
Department of Measuring Techniques  
Budapest**

HUN/8/005      Nuclear Techniques in Glass Technology

**COUNTERPART INSTITUTIONS IN HUNGARY (II)**  
(By Institute)

**BUDAPEST** (cont'd)

**AGROSTER Joint Irradiation Development Co.**  
**Budapest**

HUN/8/006      Food Irradiation Technology

**Frederic Joliot-Curie National Research Institute  
for Radiobiology and Radiohygiene**  
**Budapest**

HUN/9/010      Modernization of Personnel Dosimetry System

**Meteorological Service of the Hungarian Republic**  
**Budapest**

HUN/9/011      Environmental Radiation Telemetry

**Institute of Electrical Power Research**  
**Budapest**

HUN/9/013      Training in Management and Analysis of Severe Accidents

**Institute of Electrical Power Research  
Nuclear and Power Engineering Division**  
**Budapest**

HUN/9/014      Enhancement of Safety in NPP Operation

**EROETERV Power Station and Network Engineering Co.**  
**Budapest**

HUN/9/015      Control of Low- and Intermediate-Level Radioactive Waste



**COUNTERPART INSTITUTIONS IN HUNGARY (II)**  
(By Institute)

**DEBRECEN**

**Hungarian Academy of Sciences  
Institute of Nuclear Research  
Debrecen**

HUN/4/004      Cyclotron Laboratory  
HUN/9/015      Control of Low- and Intermediate-Level Radioactive Waste

**Kossuth Lajos University  
Institute of Experimental Physics  
Debrecen**

HUN/4/008      Procurement Assistance for Hungary

**PAKS**

**Paks Nuclear Power Plant  
Paks**

HUN/4/007      Production of Cobalt-60 Sources  
HUN/4/009      In-Service Inspection  
HUN/9/012      OSART Follow-up Visit to Paks NPP  
HUN/9/018      Nuclear Safety Review Mission

**Paks Nuclear Power Plant  
Nuclear Safety Division  
Quality Assurance Department  
Paks**

HUN/4/011      Quality Assurance in NPP Operation  
HUN/4/010      Spent Fuel Storage Technology

**Paks Nuclear Power Plant  
Research and Development Department  
Paks**

HUN/9/014      Enhancement of Safety in NPP Operation

**COUNTERPART INSTITUTIONS IN HUNGARY (II)**  
(By Institute)

**PAKS** (cont'd)

**Paks Nuclear Power Plant**  
**Radiation Protection Department**  
**Paks**

HUN/9/015      Control of Low- and Intermediate-Level Radioactive Waste

**THE AGENCY'S TECHNICAL CO-OPERATION PROGRAMME WITH**

**HUNGARY**

**SINCE 1983**

**LONG-TERM EXPERT ASSIGNMENTS**

**NONE**

**RESEARCH CONTRACTS/AGREEMENTS IN HUNGARY SINCE 1983 <sup>1</sup>**  
**(As of mid-December 1993)**

Field of activity	No. of contracts/ agreements	Amount allocated \$
General atomic energy development	4	129 000
Nuclear physics	12	142 400
Nuclear chemistry	8	79 250
Nuclear engineering and technology	21	179 100
Nuclear techniques in agriculture	14	146 150
Nuclear techniques in biology	7	78 400
Nuclear techniques in industry & hydrology	8	84 500
Safety in nuclear energy	22	309 400
TOTAL	96	1 148 200

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<sup>1</sup>/ New awards since 1983

**SCIENTISTS FROM HUNGARY SERVING AS AGENCY  
TECHNICAL CO-OPERATION EXPERTS, NATIONAL CONSULTANTS AND  
TRAINING COURSE LECTURERS  
OR  
PARTICIPATING IN CO-ORDINATION MEETINGS (\*)  
1983 - 1993  
(As of mid-December 1993)**

Name	No. of assignments	Project(s)
AMBRO	10	CUB/0/003, INS/4/020, INT/4/054, RAS/4/0078, RAS/4/008, SRL/4/009
ANDRASI	13	BRA/9/020, CUB/9/006, GRE/9/014, INT/9/055, IRQ/9/005, MAL/9/005, MAL/9/007, POL/9/009, TUR/9/010, ZAI/9/003
BACSKAI	1	RER/4/003*
BACSO	4	ECU/1/004, MON/0/002, ZAM/0/005
BAJSZ	3	RER/9/004*
BAKOS	2	ALG/0/006
BAREITH	4	IRQ/9/004, RER/9/005*
BEDE	1	ALB/4/006
BENKE	1	CUB/0/003
BERCI	8	INT/0/053, INT/9/081, RER/9/010*
BERENYI	3	EGY/0/010, HUN/4/004
BORBEELY-KISS	1	DRK/4/004
BRAUN	1	PAN/2/004
CSERHATI	1	RER/9/004*
CSIKAI	15	BGD/1/011, CUB/0/003, CUB/1/005, INT/1/040, INT/1/045, INT/8/027, NIR/0/003, NIR/0/004, NIR/1/003, RER/4/008*, SUD/0/006, THA/1/005, THA/1/007
CISOEKE	1	VIE/9/005
CSOM	1	RER/9/004*
CZAJLIK	5	BGD/8/008, CPR/8/006, INS/8/015, RAS/8/062
CZAKO	2	INT/9/063, IRQ/9/004

**SCIENTISTS FROM HUNGARY SERVING AS AGENCY  
TECHNICAL CO-OPERATION EXPERTS, NATIONAL CONSULTANTS AND  
TRAINING COURSE LECTURERS  
OR  
PARTICIPATING IN CO-ORDINATION MEETINGS (\*)  
1983 - 1993  
(As of mid-December 1993)**

Name	No. of assignments	Project(s)
CZOCH	1	CZE/9/003
CZVIKOVSKY	4	CPR/8/002, ECU/8/005, MAL/8/004, MEX/8/011
DEME	12	CYP/9/003, DRK/9/002, HUN/9/010, IRQ/9/004, MON/9/002, MON/9/003, NIR/9/003
DOBO	1	RER/8/003*
DOERFNER	2	INT/0/052, INT/0/054
DOMBOVARI	4	INT/5/119, MON/5/004, URT/5/004
EGELY	1	RER/9/002*
ELOE	4	CUB/0/003, INT/0/048, PER/4/009, RER/0/008*
ELTER	1	RER/9/002*
ENDRE	1	INT/5/119
EZSOEL	23	RER/9/002*, RER/9/004*
FALVI	1	GHA/8/004
FARKAS	5	CPR/5/006, JAM/5/003, RAS/5/020, RER/5/003*, RLA/5/020
FEHER	1	ALB/4/006
FOLDIAK	3	HUN/1/006, RER/8/003*, SAU/8/002
FRECSKA	1	SYR/1/002
FRIEDRICH	4	INT/9/079, INT/9/099, RER/9/009, RER/9/014
GADO	4	GRE/4/008, IRQ/4/010, IRQ/9/004, POR/4/012
GARDOS	9	INT/0/045, RAF/4/004, RAF/4/006, URT/9/002, ZAM/4/002, ZAM/4/004
GAZSO	16	BUL/8/008, CPR/8/002, INS/8/018, IRA/8/006, LIB/7/002, RAF/8/016, RAS/8/008, RER/8/003*, RLA/7/004, SYR/7/002, TUR/7/005, ZAM/8/003

**SCIENTISTS FROM HUNGARY SERVING AS AGENCY  
TECHNICAL CO-OPERATION EXPERTS, NATIONAL CONSULTANTS AND  
TRAINING COURSE LECTURERS  
OR  
PARTICIPATING IN CO-ORDINATION MEETINGS (\*)  
1983 - 1993  
(As of mid-December 1993)**

Name	No. of assignments	Project(s)
GERGELY	2	BUL/9/010, CZR/9/004
GOLDER	1	HUN/9/012
GYENES	6	RER/9/002*, RER/9/004*
GYIMESI	10	INT/9/104, IRA/9/011, IRQ/9/004, SYR/4/002
GYURKOCZA	1	EGY/9/016
HEDVIG	4	MAL/8/004, RAS/8/008, RAS/8/061
HERBAK	1	RER/8/003*
HERNADY	1	ZAI/0/003
HIZO	3	GHA/1/007, INT/1/014, VEN/1/006
HLAVATI	1	INT/0/048
HOLLO	6	HUN/9/014, INT/9/084, IRQ/9/004, RER/9/005*
HORVATH, L.	1	RER/9/002*
HORVATH, L.G.	22	RER/9/002*, RER/9/004*
HORVATH, Z.	1	INT/9/081
HUNYADI	1	INT/9/081
JAKAB	4	INT/1/014, SYR/9/003
JAMBRICH	1	RER/0/008*
JANOKI	1	RAF/6/010
JANOSY	9	RER/9/004*
JARFAS	2	RER/4/006*
KALINKA	1	CUB/0/003
KALMAN	6	BGD/5/007, INT/0/038, RAF/5/005, RER/5/003*, ZAM/5/016

**SCIENTISTS FROM HUNGARY SERVING AS AGENCY  
TECHNICAL CO-OPERATION EXPERTS, NATIONAL CONSULTANTS AND  
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OR  
PARTICIPATING IN CO-ORDINATION MEETINGS (\*)  
1983 - 1993  
(As of mid-December 1993)**

Name	No. of assignments	Project(s)
KARSA	5	RER/9/005*
KELEMEN	3	INT/9/063, RER/9/005*
KERESZTURI	1	RER/9/004*
KERTESZ	1	GHA/6/008
KIRALY	1	INT/5/118
KIS-VARGA	2	URT/1/003
KISS, A.Z.	1	BGD/1/010
KISS, B.	1	IRA/9/007
KISS, I.	4	INT/0/048, RER/0/008*, RER/5/003*, RER/9/004*
KISS, I.F.	12	ALG/5/005, ALG/5/010, BGD/5/007, CUB/5/004, CUB/5/006, INT/0/038, PAK/5/019, RAF/5/023, RER/5/003*
KISS, Z.	2	INT/9/078, POL/9/011
KOETELES	1	ROK/9/035
KOLTAY	6	BGD/2/006, CPR/1/002, INT/1/025, INT/1/030, POR/1/003, RER/4/008*
KOTAI	1	ALG/1/009
KOVACS, A.V.	7	GRE/8/007, INS/8/017, PHI/8/010, POR/8/002, RAF/5/021, RER/8/003, VIE/8/004
KOVACS, G.	1	INT/5/119
KOVACS, K.	1	RER/9/010*
KOVACS, Z.	1	ALG/4/002
KRUCHIO	3	GHA/4/008, RLA/4/006, SYR/4/003
LAJTHA	4	RER/9/004*



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1983 - 1993  
(As of mid-December 1993)**

Name	No. of assignments	Project(s)
LANG	1	RER/9/003*
LEVAI	5	ALB/4/006, COL/4/006, LIB/4/004, MAG/4/002
MAHUNKA	3	DRK/4/004, HUN/4/004, TUR/2/010
MAROTHY	2	HUN/4/009
MAROTI	1	RER/9/002*
MILLER	7	DRK/2/003, IRA/2/004, PER/4/011, PHI/4/019, TUR/2/009
MUCSKAI	1	RER/9/004*
NAGY, L.	2	HUN/9/011, RER/9/003*
NAGY, S.	1	NIR/0/003
NEMETH	2	RER/4/006*
NIKL	2	LIB/9/004, NIR/9/004
NYARY	2	SYR/1/002
ORMAI	6	RER/9/010*, SRL/9/003
PALFALVI	26	BGD/1/007, GHA/1/007, GRE/9/015, IVC/9/002, MAG/9/002, NIR/9/003, NIR/9/004, NIR/9/005, PAK/9/009, RAF/9/005, SEN/9/002, SIL/9/002, UGA/9/003, URT/9/002, ZAM/9/004, ZIM/9/003
PATKAI	2	DRK/1/004, DRK/4/003
PAVLIK	3	INS/9/017, PHI/9/016, THA/9/013
PELLEI	1	BGD/0/003
PELLET	5	RAS/7/003, RAS/8/008, ZAM/7/002, ZAM/8/003
PELLIONISZ	8	DRK/4/003, ETH/4/003, GHA/4/008, PER/1/005
PERNECZKY	46	HUN/9/007, RER/9/002*, RER/9/004*

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(As of mid-December 1993)**

Name	No. of assignments	Project(s)
PETER, A.	10	CUB/0/003, INT/0/043, INT/4/068, INT/4/078, INT/4/085, PER/1/005, RLA/0/006, SYR/4/005
PETER, K.	1	INT/9/081
PETOE	4	ALG/0/006, ZAM/0/005
POR	1	CPR/4/012
QUITTNER	2	CUB/1/002, SRL/1/003
REDLY	1	INT/5/119
RONAKY	2	ALB/4/006, ROM/9/0916
SCHAY	1	ALB/4/005
SEBESTYEN	3	INT/9/065
SERF	1	ETH/4/003
SHUNK	1	CPR/9/015
SIMEN	1	VIE/9/005
SIMONICS	1	EGY/9/016
SOLMYODY	1	INT/5/119
SOMOGY	3	INT/1/032, VIE/0/002
STENGER	25	ALG/5/005, BGD/5/010, CPR/8/002, CUB/5/006, GHA/8/004, INT/0/038, INT/0/048, IRA/8/S006, LIB/7/002, PHI/1/012, RAS/8/061, RER/8/003*, RER/9/007*, SIN/1/005, SIN/8/009, TUR/7/005, URU/8/010, VIE/2/003, VIE/8/004
STIEGRAD	1	BGD/0/003
SZABADOS	58	HUN/9/007, RER/9/002*, RER/9/004*, SYR/9/005
SZABO, K.	6	RER/9/004*

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Name	No. of assignments	Project(s)
SZABO, P.P.	7	DOM/2/002, JAM/4/002, JOR/0/004, MYA/9/002, MYA/9/003, VIE/0/002
SZALISZNYO	1	INT/0/053
SZATMARY	4	CUB/1/005, IRA/4/016, PER/1/005
SZIKSZAI	5	HUN/9/014, RER/9/005*
SZIKSZAINÉ	1	HUN/4/010
SZOEKE	1	UKR/9/004
SZOKEFALVI-NAGY	2	RER/4/008*
SZONDI	2	ALB/4/006
SZTANYIK	3	INT/9/055
SZARICSKAI	7	ALG/0/006, BGD/1/011, DRK/1/002, NIR/0/003, NIR/1/003, NIR/1/004,
TARKANYI	2	EGY/0/010, HUN/4/004
TECHY	20	HUN/9/007, RER/9/022*, RER/9/004*
TOEROEK	2	ALG/2/002, NER/0/003
TOTH, G.	3	IRA/2/004, URU/2/008
TOTH, I.	17	HUN/9/007M RER/9/002*, RER/9/004*
TOTH, L.	3	INT/1/029, INT/4/054
TOTH, P.	1	SLR/4/003
TRAMPUS	4	HUN/4/009, INT/0/048, RER/0/008*, RER/4/003*
TROSZTEL	2	RER/9/002
TURAI	2	DRK/9/002, MON/9/004
URBAN	1	NIR/9/003
VALEK	3	EGY/0/010, INT/0/045

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1983 - 1993  
(As of mid-December 1993)**

Name	No. of assignments	Project(s)
VARGA	4	INT/9/065, VIE/9/005
VARJU	1	RER/9/004*
VAS	1	ALG/0/006
VIGASSY	8	RER/9/002*, RER/9/004*
VINCZE	3	RER/9/004*
VIZDOS	3	INT/9/065
VOEROESS	6	IRQ/9/004, RER/9/004*, RER/9/005*
VOROSS	3	INT/9/063, RER/9/002*, RER/9/005*
ZACHARIEV	1	ZAI/5/007
ZAMBO	1	MYA/6/013
ZAMORI	13	CUB/0/003, CUB/1/005, INT/0/043, INT/4/068, INT/4/078, INT/4/085, INT/4/096, INT/4/100, INT/4/102, INT/4/108, INT/4/113, RLA/0/006, SYR/4/003
ZARAND	7	AFG/6/009, EGY/1/015, INS/6/006, INS/6/008, NIR/6/007
ZOLNAI	2	INT/1/037, RAF/0/002
ZOMBORI	5	ETH/9/004, NIR/9/003, SUD/1/005, SUD/9/005
ZSDANSZKY	1	INT/1/014
ZSINKA	8	BGD/4/006, INS/6/004, IRA/2/004, PAK/4/031, RAS/2/002, VIE/0/002
ZSOLNAY	6	ALB/4/006, COL/4/006, INS/4/030, RAS/4/011
TOTAL	733	

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

Recipient country	No. of fellowships	No. of scientific visits	TOTAL <sup>1</sup>
AFGHANISTAN	3	-	3
ALBANIA	5	3	8
ALGERIA	3	4	7
ARGENTINA	-	3	3
BANGLADESH	1	5	6
BOLIVIA	1	-	1
BRAZIL	-	1	1
BULGARIA	4	4	8
CHINA	11	2	13
COLOMBIA	4	1	5
COTE D'IVOIRE	1	-	1
CUBA	9	7	16
CYPRUS	1	1	2
CZECHOSLOVAKIA	1	-	1
EGYPT	12	3	15
ETHIOPIA	3	-	3
GHANA	3	2	5
GREECE	1	1	2
INDONESIA	4	3	7
IRAN	18	3	21
IRAQ	10	7	17
JORDAN	2	-	2
KOREA, D.P.R.	8	5	13
LIBYA	16	-	16
MALAYSIA	2	5	7

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

Recipient country	No. of fellowships	No. of scientific visits	TOTAL <sup>1</sup>
MEXICO	-	1	1
MONGOLIA	7	2	9
MOROCCO	5	-	5
NIGER	1	-	1
NIGERIA	7	3	10
PAKISTAN	5	4	9
PANAMA	1	-	1
PARAGUAY	-	1	1
PHILIPPINES	1	3	4
POLAND	3	6	9
PORTUGAL	7	1	8
ROMANIA	1	-	1
SUDAN	8	-	8
SYRIA	15	1	16
TANZANIA	1	-	1
THAILAND	3	3	6
TURKEY	9	3	12
UGANDA	-	1	1
VIET NAM	36	5	41
ZAIRE	1	-	1
ZAMBIA	4	2	6
TOTAL	238	96	334

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

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

Course No.	Course Title	Partici- pants	Year
INT/0/033 (001)	Interregional study tour on nuclear power development	25	1983
INT/1/031 (001)	Interregional study tour on the utilization of low-energy accelerators	24	1985
INT/1/033 (001)	Interregional study tour on primary and secondary standard dosimetry laboratories for technical staff of SSDs	24	1985
INT/4/065 (001)	ITC on advanced research reactor utilization	17	1983
INT/4/069 (001)	Interregional study tour on isotope production, including radiopharmaceuticals	26	1984
INT/4/071 (001)	ITC on research reactor operation	15	1984
INT/4/087 (001)	ITC on radiation technology and engineering	13	1986
INT/4/097 (001)	ITC on radiation technology and engineering	18	1988
INT/5/104 (001)	Interregional study tour on radiation disinfestation of grain	26	1986
INT/8/024 (001)	Interregional study tour on radiation techniques in industry	22	1984
RER/4/002 (001)	RWS in ISI of WWER-type reactors	9	1989
RER/4/003 (005)	RWS on in-service inspection for 440 MW(E) WWER-type reactors	10	1993

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

Course No.	Course Title	Partici- pants	Year
RER/5/003 (003)	RWS on good irradiation practices and conduct of pilot-scale food irradiation studies	8	1988
RER/5/006 (001)	RTC on the regulatory control of food irradiation	10	1992
RER/9/005 (001)	RWS on probabilistic safety assessment	5	1989
RER/9/015 (001)	RTC on re-evaluation of seismic safety of NPPs	13	1993
RER/9/018 (001)	RTC on medical preparedness for radiation accidents	17	1993
	TOTAL	282	