

## Records related to Nuclear Power Infrastructure in the INIS Database

### Bibliometric Study

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The main objective of the study was: to make an inventory of the records related to Nuclear Power Infrastructure in the INIS Database; to provide statistics and scientific indicators for the INIS users, to enable the users to extract useful information from the INIS Bibliographic Database about relevant articles. The period covered in the analysis was from 1970 till the end of September 2001, and includes all items which have been published and input into the INIS Database until that date. The total number of items included by that date was 2260937. The INIS Database is published on CD-ROM by the INIS Secretariat. It comprises 8 archival discs covering the period from 1970 through 2000 and one current disc. The last CD taken into account for the present analysis was labelled "2001/01-2001/09".

In time dependence analysis, records published before 1975 were not included, since records collected during the start-up period of the INIS Database from 1970-1974, suffer from incomplete literature coverage. The following period, from 1975- September 2001, were considered as relevant for this analysis, although records input in 2000 and 2001 should be considered as incomplete, due to the lead-in time for the database.

According to the preliminary definition of what Nuclear Power Infrastructure involves the searches in the INIS Database were performed according to the following topics:

1. Industrial requirements
2. Legal/Institutional requirements
3. Socio-political aspects
4. Education/training/R&D aspects (Technology transfer - included)
5. Economic aspects

Number of relevant items existing in the INIS Database according to the mentioned subjects are shown in Table 1.

Table 1 Number of records related to Nuclear Power Infrastructure present in the INIS Database

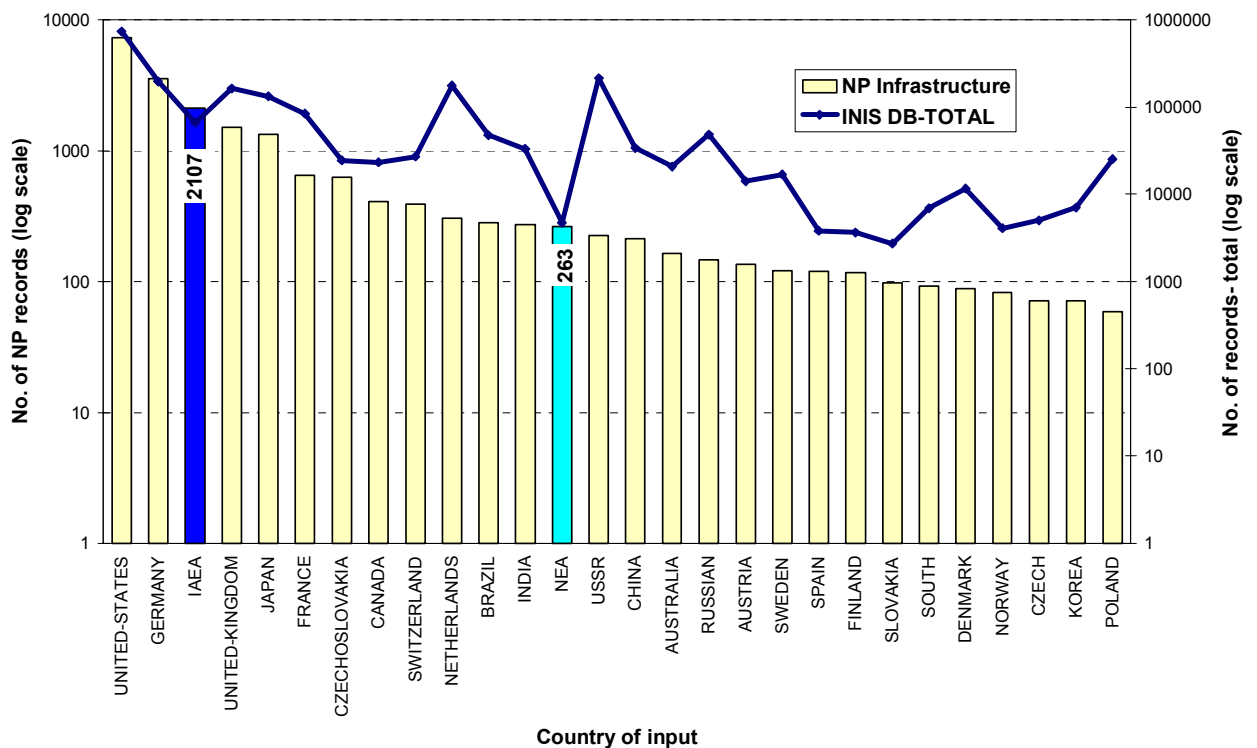
	No. of records in INIS DB	Input by IAEA	Input by NEA
Industrial requirements	3695	217	66
Legal/Institutional requirements	6432	601	91
Socio-political aspects	4279	233	141
Education/training/R&D aspects and Technology transfer	12188	1443	106
Economic aspects	7952	670	69
NP Infrastructure no economic aspects	21440	2107	263
NP Infrastructure economic aspects included	25329	2395	289

## Countries of input

During the period of 25 years, the records in the INIS database were sent by 119 Member countries or organisations, 85 countries/organisations have sent records related to Nuclear Power Infrastructure. Countrywise distribution of relevant records is shown in Figure 1 and Table 2.

As expected, the highest contribution comes generally from the countries which have the most developed nuclear programs and operate most nuclear power plants, namely the USA (34%), Germany (16.4%), the United Kingdom (7%), Japan (6.2%) etc. The exceptions are Netherlands and IAEA. Netherlands, although not a leading country in nuclear technology, is among the first ten contributors because of its developed scientific publishing activity. Similar is the case of the IAEA due to the Agency's task to promote nuclear energy and co-ordinate activities in development of related technology. The contribution of IAEA amounts to 9.8%.

Figure 1 Records related to Nuclear Power Infrastructure in the INIS Database per INIS Member State/Organisation of input



It should be noted that the country-wise share of records related to Nuclear Power Infrastructure does not have the same trend as their total share in the INIS Database. This could lead to some conclusions related to each country's interest in the field.

Table 2 Number of records related to Nuclear Power Infrastructure in the INIS Database per country/organisation of input

	country/organisation of input	NP Infrastructure	percent	INIS DB- TOTAL	percent
1	UNITED-STATES	7289	34.0%	738796	32.7%
2	GERMANY	3527	16.4%	196959	8.7%
3	IAEA	2107	9.8%	66041	2.9%
4	UNITED-KINGDOM	1497	7.0%	164009	7.3%
5	JAPAN	1327	6.2%	132669	5.9%
6	FRANCE	645	3.0%	83404	3.7%
7	CZECHOSLOVAKIA	625	2.9%	24429	1.1%
8	CANADA	409	1.9%	23215	1.0%
9	SWITZERLAND	391	1.8%	26843	1.2%
10	NETHERLANDS	305	1.4%	177284	7.8%
11	BRAZIL	283	1.3%	47851	2.1%
12	INDIA	271	1.3%	33351	1.5%
13	NEA	263	1.2%	4712	0.2%
14	USSR	223	1.0%	214144	9.5%
15	CHINA	212	1.0%	33801	1.5%
16	AUSTRALIA	165	0.8%	20779	0.9%
17	RUSSIAN	146	0.7%	48256	2.1%
18	AUSTRIA	136	0.6%	14174	0.6%
19	SWEDEN	121	0.6%	16786	0.7%
20	SPAIN	120	0.6%	3811	0.2%
21	FINLAND	117	0.5%	3671	0.2%
22	SLOVAKIA	98	0.5%	2728	0.1%
23	SOUTH AFRICA	92	0.4%	6904	0.3%
24	DENMARK	88	0.4%	11515	0.5%
25	NORWAY	82	0.4%	4077	0.2%
26	CZECH	71	0.3%	5044	0.2%
27	KOREA	71	0.3%	7079	0.3%
28	POLAND	59	0.3%	25280	1.1%
	others	701	3.3%	123325	11%

### Time dependence

Time dependence of the records related to different aspects of Nuclear Power Infrastructure compared to the entire INIS Database are shown in Figures 2-5.

Figure 2 Records related to Industrial requirements of Nuclear Power Infrastructure in the INIS Database vs. year of publication

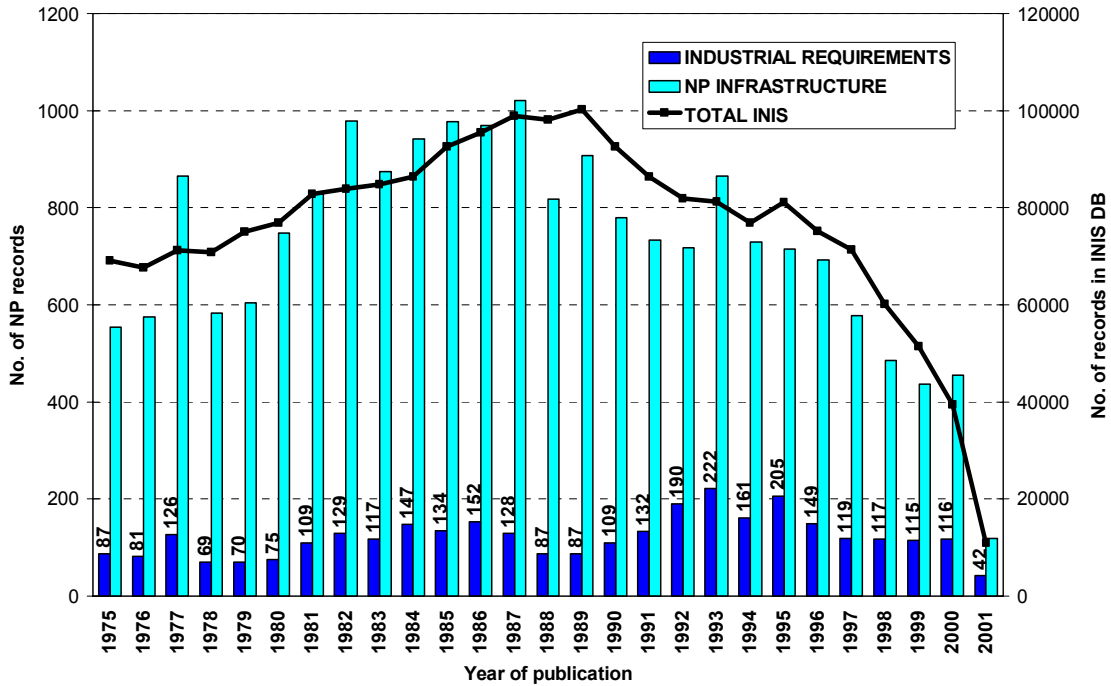


Figure 3 Records related to Legal/institutional aspects of Nuclear Power Infrastructure in the INIS Database vs. year of publication

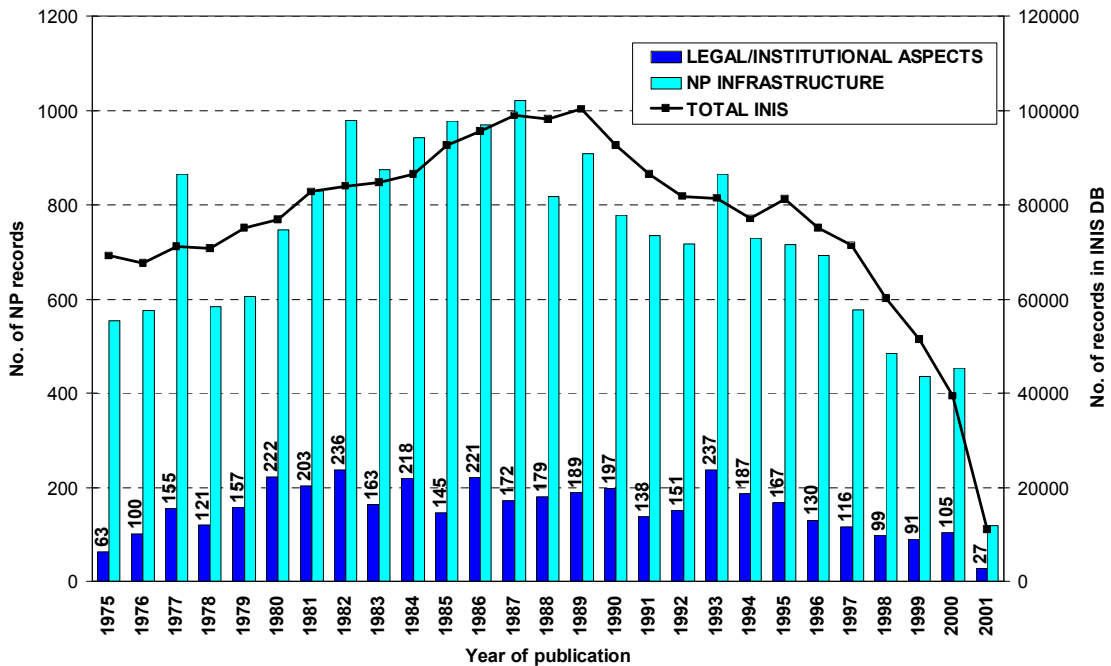


Figure 4 Records related to Socio-political aspects of Nuclear Power Infrastructure in the INIS Database vs. year of publication

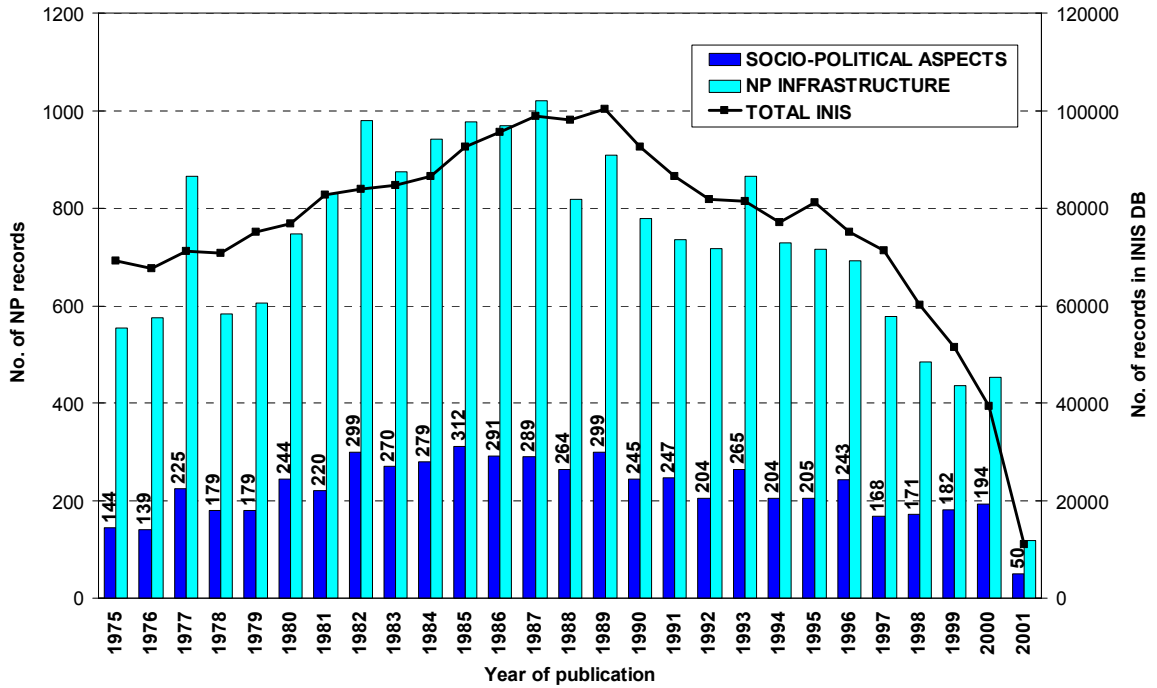
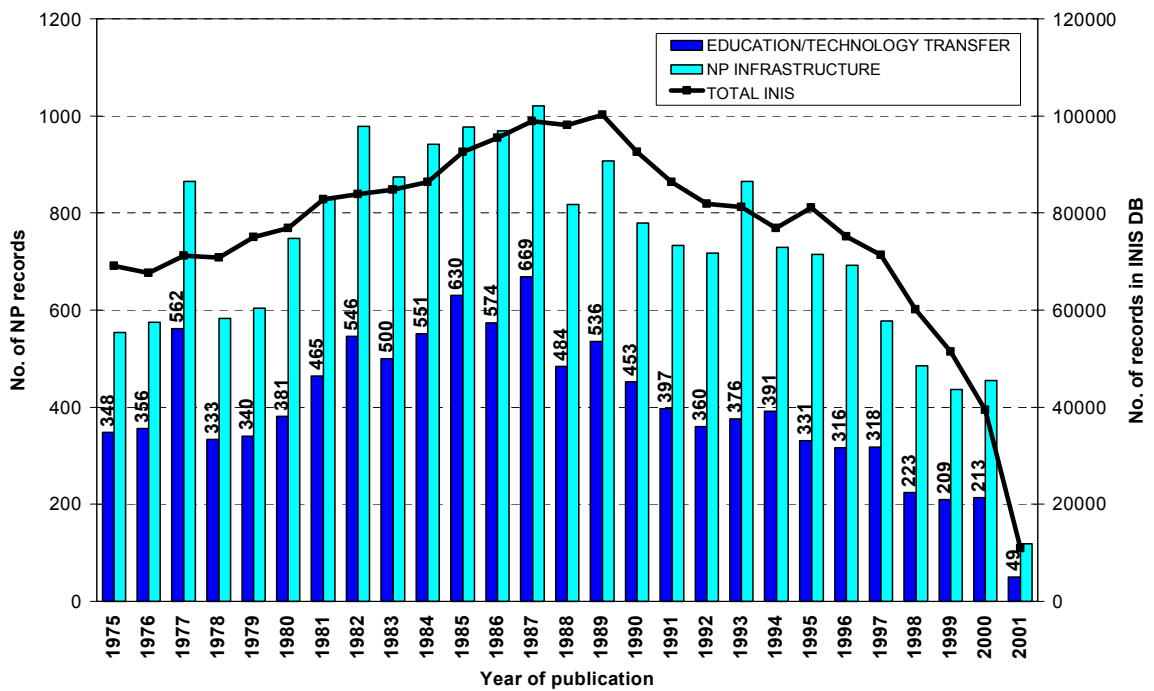
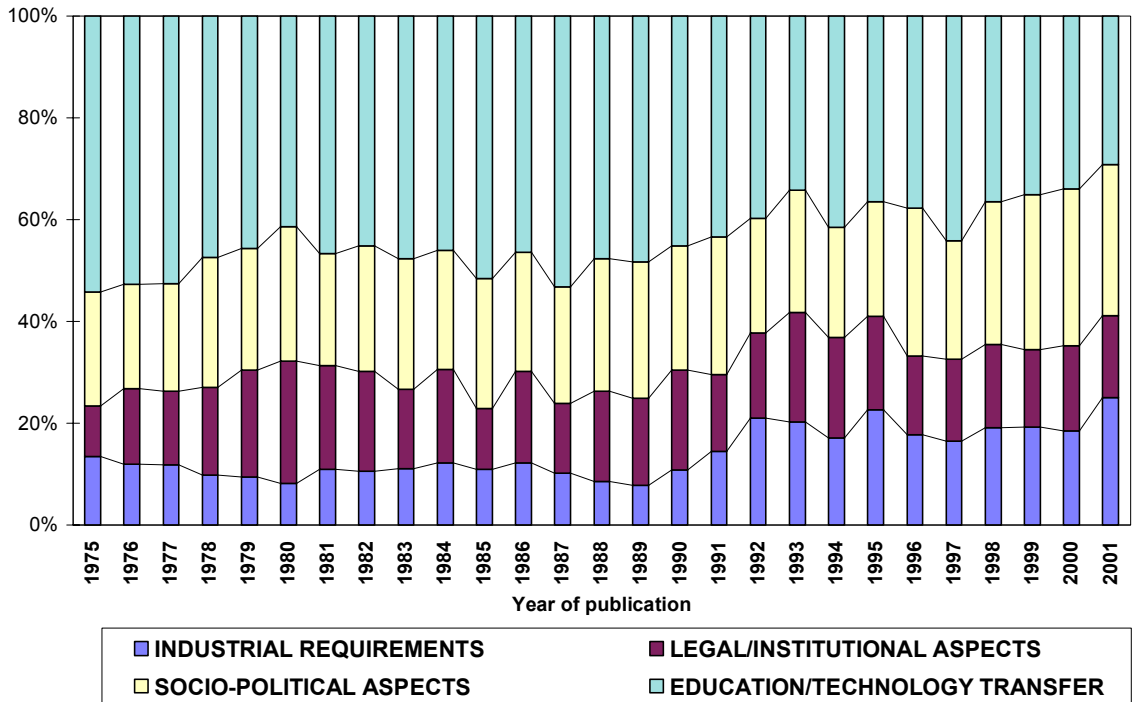


Figure 5 Records related to Education/Training and R&D aspects of Nuclear Power Infrastructure in the INIS Database vs. year of publication



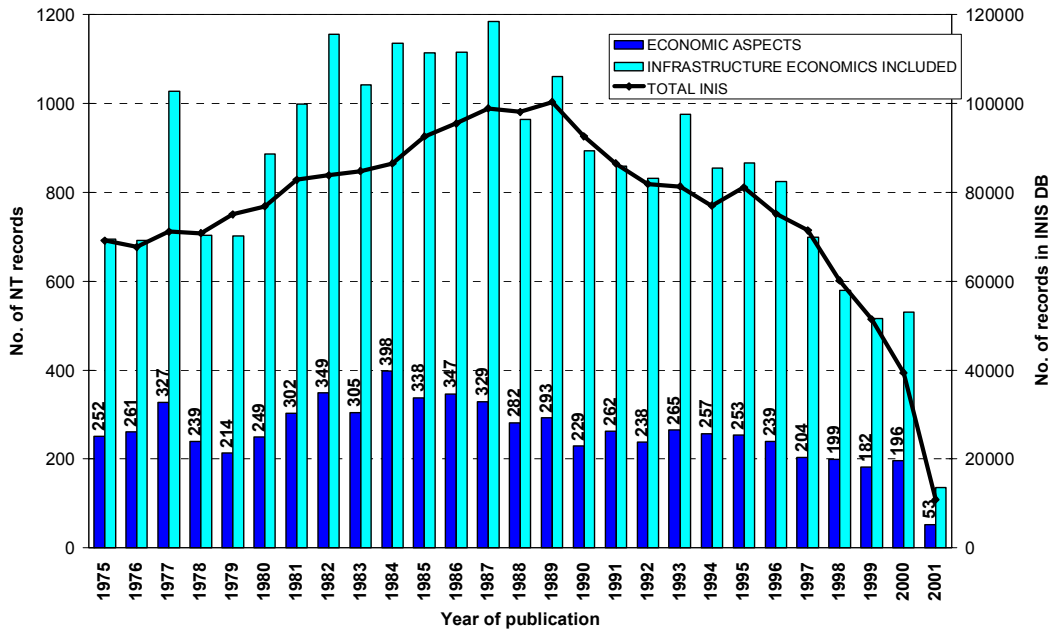
Share of different aspects of Nuclear Power Infrastructure, vs. year of publication, namely: Industrial requirements, Legal/Institutional requirements, Socio-political aspects, Education/ training/R&D aspects (Technology transfer - included) is shown in Figure 6.

Figure 6 Share of records related to different aspects of Nuclear Power Infrastructure in the INIS Database vs. year of publication



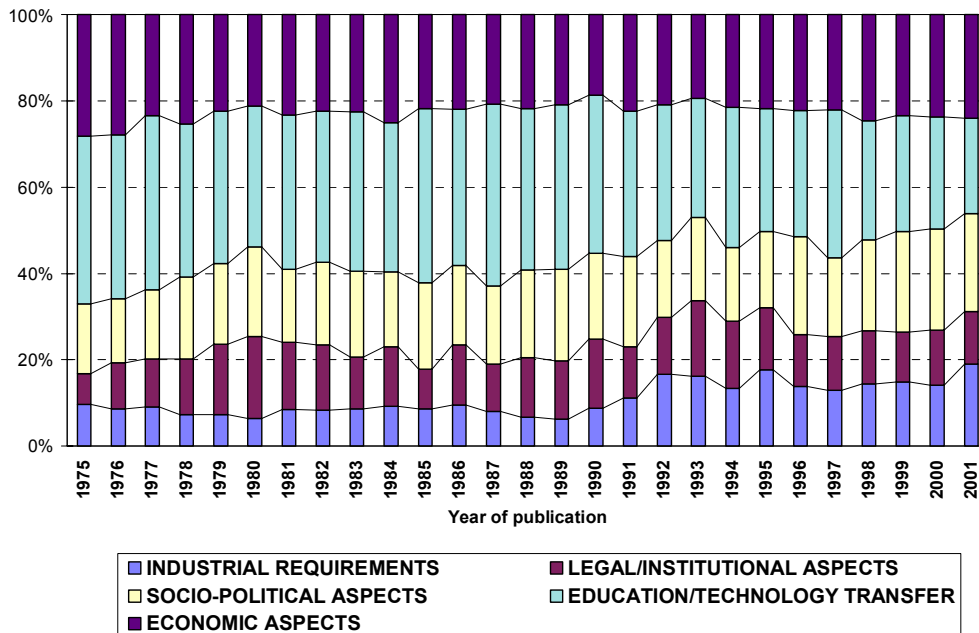
In case economic aspects of Nuclear Power Infrastructure should be included time dependence of relevant items in the INIS Database is shown in Figure 7.

Figure 7 Records related to Economic aspects of Nuclear Power Infrastructure in the INIS Database vs. year of publication



Share of different aspects of Nuclear Power Infrastructure, vs. year of publication, namely: Industrial requirements, Legal/Institutional requirements, Socio-political aspects, Education/ training/R&D aspects (Technology transfer - included), and Economic aspects is shown in Figure 8.

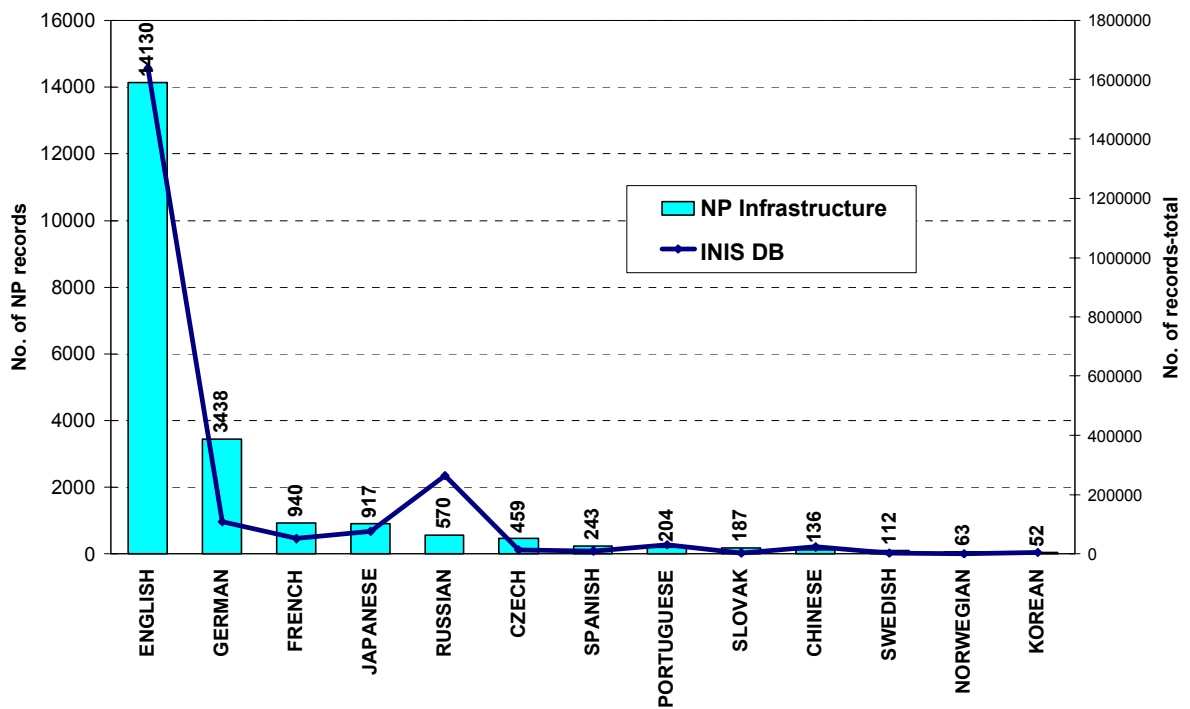
Figure 8 Share of records related to different of Nuclear Power Infrastructure in the INIS Database vs. year of publication



## Languages

While the INIS Bibliography contains records related to Nuclear Power Infrastructure 22 languages, only five languages, English (65%), German (16%), French (4.5%), Japanese (4%), and Russian (2.6 %) and Czech (2%) cover 95% of records, making English the predominant language. The contribution of English language records to the total number of records in INIS Database is 72.3%. As this makes the share of all the other languages almost negligible one is lead to conclude that many authors from non-English speaking countries are submitting their publications in English (Figure 9).

Figure 9 Records related to Nuclear Power Infrastructure in the INIS Database vs. Language of input



## Availability

Apart from bibliographic data of records in the INIS Database more than half a million items are available from INIS as full text, so called non-conventional publications (NCL). Recent publications are available in electronic form, while the previously published are available in the form of microfiche. Availability of the records concerned with different aspects of Nuclear Power Infrastructure is shown in Figures 10 and 11.

Figure 10 Availability of NCL records related to Nuclear power Infrastructure

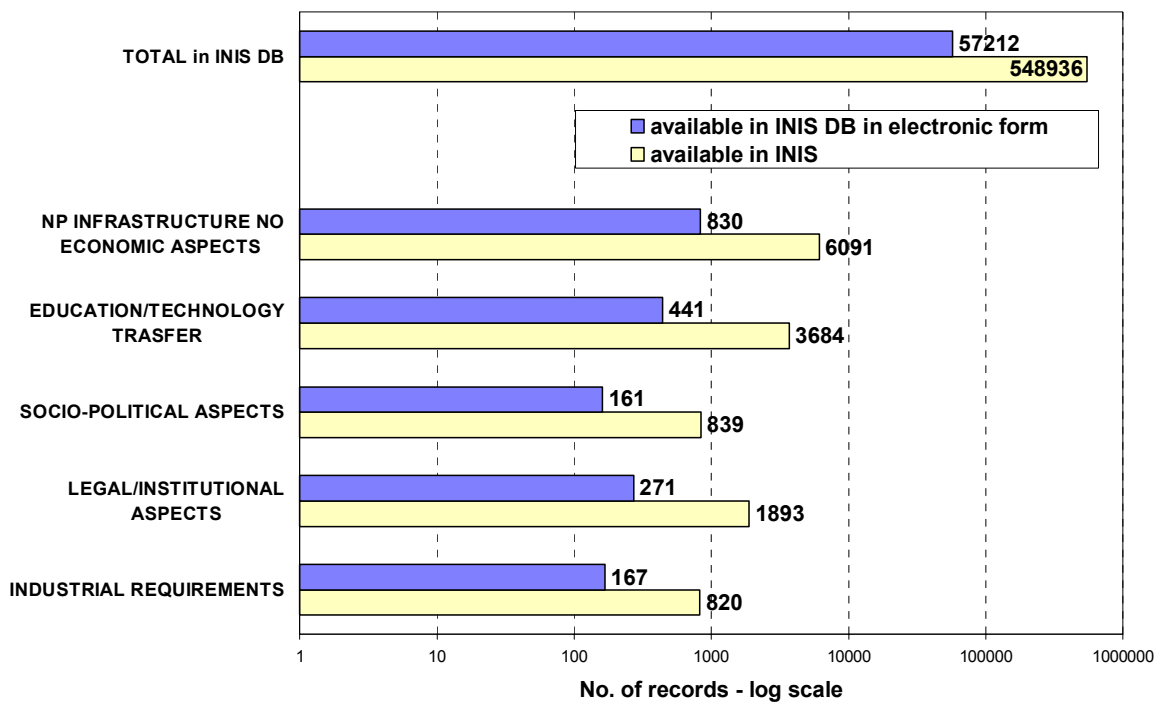
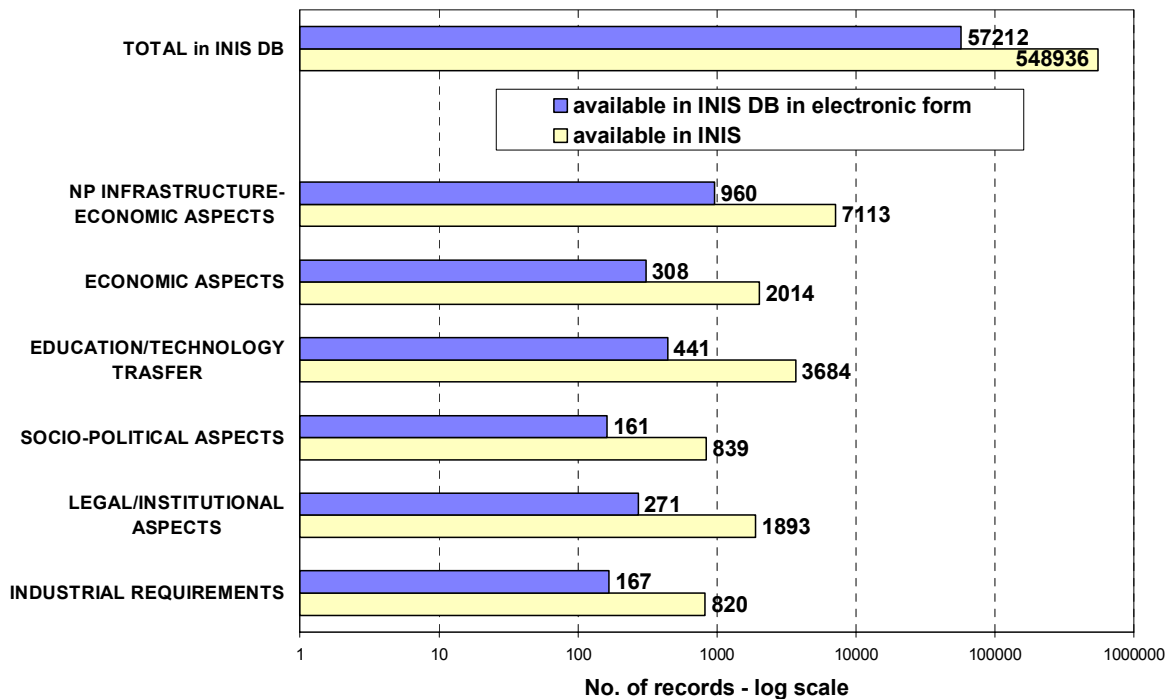


Figure 11 Availability of NCL records related to Nuclear power Infrastructure



Additionally, an analysis was done to show what countries are referred to in publications related to different aspects of Nuclear Power Infrastructure. Number of records related to Developing and Developed countries are shown in Figures 12-13.

Figure 12 Records related to Nuclear power Infrastructure referring to Developing or Developed countries

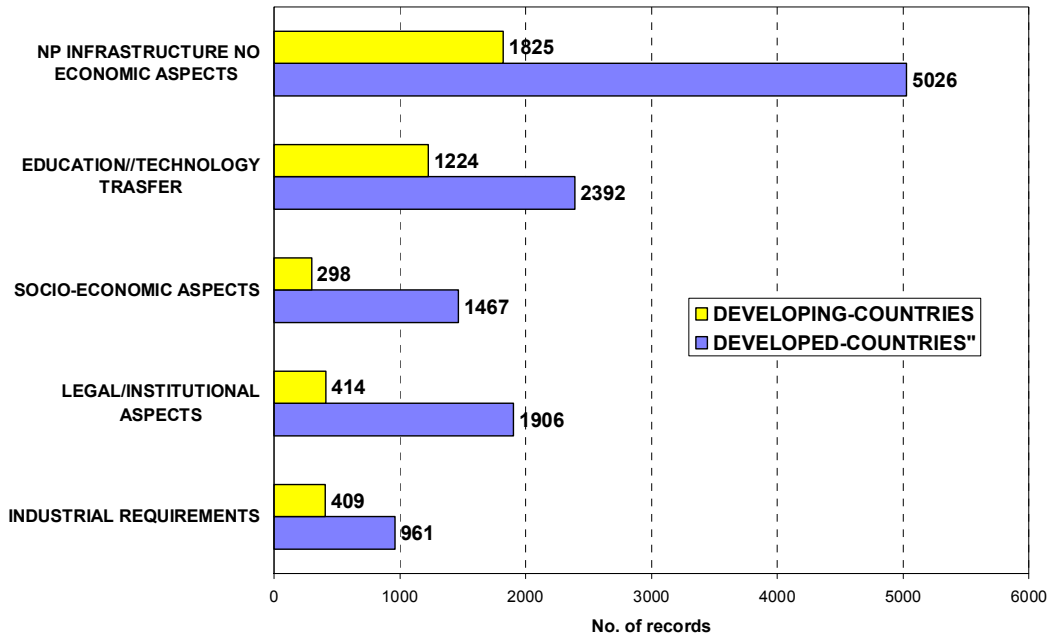
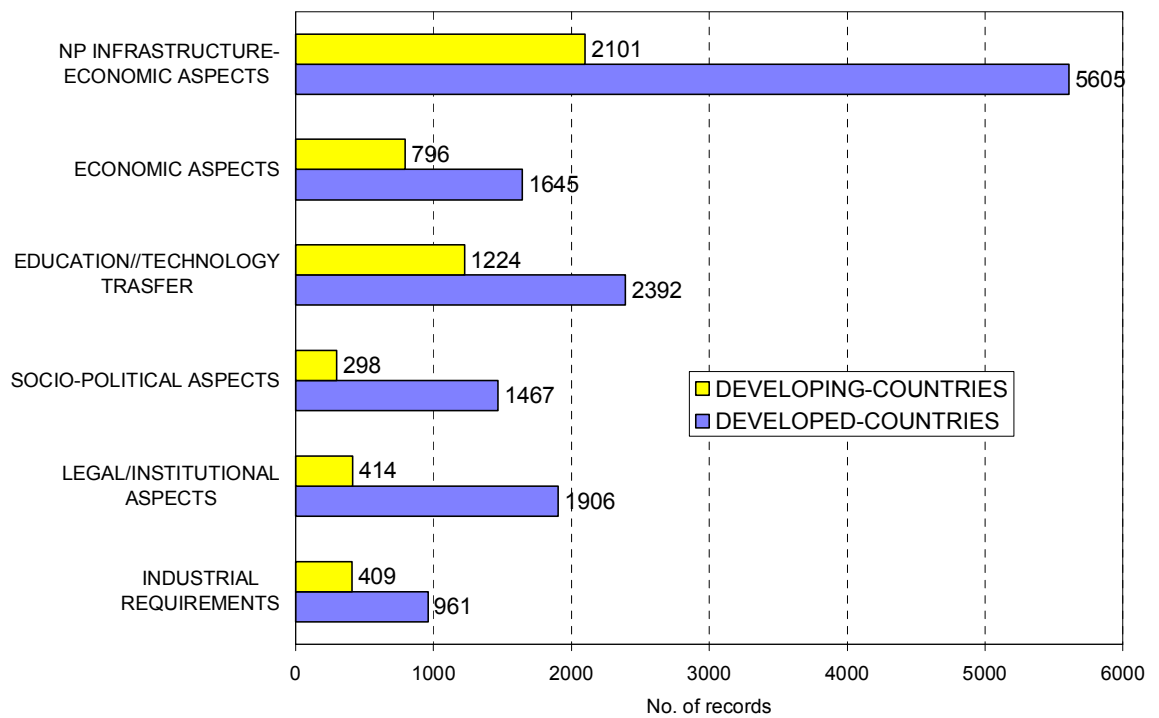


Figure 13 Records related to Nuclear power Infrastructure referring to Developing or Developed countries



## **Concluding Remarks**

Quantitative data obtained in the present analysis show that the share of records concerned with Nuclear Power Infrastructure in the INIS database remained almost constant during the last 25 years (about 1%).

Most of the publications included in the INIS Database came from countries having highly developed nuclear programs and nuclear power plants in operation, namely the USA, Germany, the United Kingdom, Japan. Significant contribution came from IAEA (9.8%) and not as important from NEA (1.3%).

The main language of publications related to Nuclear Power Infrastructure is English (about 65%).

The share of records relevant for Nuclear Power Infrastructure that are explicitly related to developed countries amounts to about 22%, while only 8% mention developing countries.

About 28% of all the records related to Nuclear Power Infrastructure in the INIS Database are available as full text, of which about 13% of recently input items are available in electronic form.