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Uranium Purchasing and Stockpiling Policies of European Utilities

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When preparing my little presentation I was wondering whether a title like "Policies of European utilities to minimise the inflow of uranium not needed and to reduce excessive stockpiles" would not be more appropiate.

But I hope that I shall be able to convince you that we European utilities are not that short-sighted and that we do have a more far-sighted policiy regarding uranium supplies.

Let me first compare the nuclear energy capacities of the European utilities with the world-wide nuclear energy outside the communist countries (WOCA). Figure 1 is based on the latest projections of nuclear energy within WOCA. I should like to emphasize that the total capacity of 37o GW projected for the year 2ooo is substantially lower than the figure projected by the OECD/NEA in 1983 (about 5oo GW), a figure shown on one of my next slides.

Between the years 1985 and 2ooo, the share of Western Europe represents about 4o%. However, the uranium production (Figure 2) of Western Europe is not more than about 9% of the total WOCA production. Most European utilities therefore almost entirely depend on uranium imports. Even France, the only Western European country having a significant uranium production, has to cover an increasing share of its demand through imports.

These are common features, but there is a number of important other attributes in which Western European utilities differ significantly: size, ownership (private, local communities, state), overall conditions, which may differ from country to country, nuclear share of total power plant capacity, electricity production, management philosophy and many more. In my short presentation it will not be

possible to discuss special features and differences. However, most of the statements and figures quoted regarding the Western European utilities as a whole are of a global nature although some may not describe specific cases adequately.

Let me first spend a minute on the historical developments in the nuclear fuel cycle. 15 years ago, the situation was characterized by huge unneeded capacities generated for nuclear weapon programmes. The civil application of nuclear energy developed not as quickly as anticipated resulting in an oversupply of uranium at very low prices. Most of us believed at that time that we could depend on those favourable market conditions forever and concluded short and medium range supply contracts for our initial power plant programms.

However, only a few years later the situation started to change drastically: The new terms and conditions of USAEC enrichment-contracts resulted in an artificially increased demand of natural uranium as feed supply. The oil and energy crisis prompted in most countries steeply rising nuclear power plant programmes, followed by an even more hectic run on uranium, which suddenly turned out to be scarce and hardly available even at fast rising prices.

Governments of many uranium exporting countries, because of increasin concern about nuclear weapon proliferation, took political measures which resulted in a slowdown of production and in temporary export embargoes. As a consequence, and in addition to the above mentioned price development the uranium users, depending on imports, viewed their supply being endangered, and the uranium market became a seller's market to an unprecedented degree.

The uranium supply contracts concluded at that time were, similar to those concluded during the years of oversupply, not the result of a well-structured puchasing - or better: procurement-policy, but were almost exclusively dictated by emergency situations.

At that time, many European utilities, whose countries did not dispose of sufficient own uranium reserves or uranium production capacities, were convinced that, in order to secure their uranium supplies, they would have to do more than just concluding longterm supply contracts. They participated, directly or indirectly through daughter companies actively in the uranium business, in the prospection, exploration and development of uranium resources. They acquired participations in recources already developed, often only limited by the laws or the government policies of producer countries. Furthermore, utilities were more and more convinced that a sufficient diversification of the uranium supply as regards countries and producers was required as an assurance against commercial and, in particular, political risks. This was combined with an adequate stockpiling policy.

This figure shows the distribution of uranium production of the Western World (WOCA) for the year 1984. Although this distribution was somewhat different during the late seventies (e.g. United States 4o% approx.), there is no change to the basic situation that there are 5 big producer countries or regions. Most of the European untilities concluded that, under the existing circumstances, the ideal uranium supply concept should look like this: medium and longterm contracts for the supply of 2o-25% of the demand to be supplied from each of the big producer regions. Some remaining demand was normally reserved for the spotmarket and reprocessed nuclear fuel, taking care for unpredictable operation problems or power plant delays.

This buying policy has to be supplemented by uranium stockpiles corresponding to the demand of the next coming say two years. Such a stockpile will cover the demand of up to 8 years in case of interruption of deliveries by <u>one</u> producer country (i.e. 1/4 approx.), a time span which would normalley be sufficient to replace the missing deliveries by others at acceptable conditions. This timespan could even be sufficient to develop already explored recourses.

However, such a buying and stockpiling policy is not always easy: Due to the slow growth of the world-wide economy in recent years electricity consumption increased much slower than initially expected.

Increased opposition of the population against the civil use of nuclear energy, in particular after the TMI incident, delays and additional licensing problems resulted in drastic investment cost increases. Development of nuclear power in many countries was delayed and reduced to lower figures every year (Figure 3): Whereas OECD/NEA projected in 1975 a nuclear energy capacity of around 2200 GW in the year 2000, the 1983 projections show a little more than 500 GW (which is now considered to be too high!).

With the reduction of the nuclear power programmes, uranium demand was, of course, simultaneously reduced. Under the uranium supply contracts concluded on the basis of the earlier nuclear energy programmes, utilities had to take delivery of more uranium than needed. Stockpiles larger than ever planned were built up and, therefore diversification regarding sources of supply could not be realised as originally desired.

But in spite of these problems some success was possible as demonstrated in Figure 4 where the uranium supply of the 10 countries of the European Community is shown. Conditions for Western Europe as a whole should be basically similar (USA around 5%, Canada around 10%, Australia around 11%, and a corresponding reduction of the remaining supply shares). The USA, until recently the largest uranium producer within WOCA (1978: 42%; 1981 still around 34% of WOCA production) has now a very reduced share only. Besides commercial aspects (high production cost level in USA), the non-proliferation policy of th US Government might have contributed to this phenomenon to a large degr

Since the diversification policy will be further persued, the shares of the supply regions should develop towards even more balanced proportions. I expect the share of Canada for instance to be above 20% already in 1985; on a longterm basis, the Australian share will also increase, unless there are political obstacles.

As already mentioned, the fact that the overall situation looks rather satisfactory should not lead to the conclusion that the same is true for each individual utility. Even between different countries there are

large differences: whereas some countries have mostly implemented their goal as regards a sufficient diversification, others still depend on only one or two producer countries.

Fortunately, those users, which were not able to sufficiently diversify their sources of supply, are still currently well covered against sudden supply interruptions due to their large stockpiles, which have built up to some extent beyond their control. As a whole, the Western European utilities own uranium stockpiles, of over 45,ooo tons of natural uranium equivalent, i.e. about a three years' demand. The uranium quantities included in the different processing steps normally correspond up to a further two years' demand. In addition to this there are the strategic stockpiles of some European governments, amounting to more than half of the utility stockpiles.

Out of the strategic utility stockpiles, currently about 6o% are natural uranium, and about 4o% enriched uranium. This ratio will change during the next few years due to the oversupply of separative work. The strategic utility stockpile will by 1988 be slightly reduced to about 4o.ooo t U, then representing about a two years' demand and consisting of about 3o% natural uranium, and about 7o% enriched uranium.

It should be mentioned, that during the recent years, when the spot-market price, partly due to selling out of stockpiles by US utilities, was under high pressure, European utilities with only very few exceptions, were not on the selling market. Some of the reasons obviously were: a lower interest level in Europe compared to the United States, strong dependence of European utilities on imports (and therefore the need to keep larger stockpiles) and a better financial situation of most European utilities.

The present total nuclear capacity in Western Europe is about 75ooo MW. Figure 5 shows how much fuel you would need to operate such a generating capacity for two years. If we compare the quantities and monetary values of natural uranium, fuel oil and European hard coal you can see why nuclear energy can be considered as an almost "domestic energy source" if sufficeint stocks are available at any time. The interest charge caused by a two years uranium supply corresponds to stockpiling fuel oil for a four weeks demand!

I believe that as far as security of supply and stockpiling policy are concerned European utilities have almost achived what they wanted But where are we as far as market stability is concerned? Did Europea utilities contribute sufficiently to a stable uranium market? The answer is very short: I am afraid rather little. One of the reasons may be the fact that the uranium market is still a very young market, and that the partners - producers and consumers - had to learn a lot. The most important reasons, however, were unforseeable outside factor politically motivated actions by governments; serious troubles in the worldwide economy; the oil crises and its impact on world wide growth; the decrease of public acceptance of nuclear energy.

Those influences affected the market balance seriously and will continue to do so. It will be a long time before we achieve the desired balance between uranium supply and demand and have a more stable market development- if ever!

It is important in any case to establish sufficient market transparenc During the recent years, significant progress has certainly been made, last not least through the efforts of the Uranium Institute, where producers and consumers concentrate their joint efforts towards a mutual understanding.

In view of the long lead times required for the development of uranium resources and the considerable time lag to react to changed demand, such transparency of the market means the possibility to predict developments at an early stage. First of all utilities and their governments have to plan their nuclear energy programmes even more realistically; a very difficult task.

The uranium consumers could and should contribute to longterm market stability by implementing a longterm foreward contracting policy. As demonstrated in Figure 6, significant differences exist between the various regions; the figure shows the spot purchases and the uranium transactions under longterm contracts of European and US utilities. In Europe, the share of the spot transactions has always been smaller and even decreased since 1975, contrary to the rather unstable develo ment in the United States.

You can see the result of the present contracting policy in Figure 7, which shows, to which degree the natural uranium required for the European reactors is already contracted today. This coverage represents about 4o% in 1995. This, -although not yet sufficient- is more than twice the relative coverage of US utilities; their 1995 uranium needs are only covered through existing contracts by less than 2o%. I do not have a number for Japan but I am sure it is even higher than the European one.

Longterm contracting, however, can only be helpfull, if the commercial conditions are reasonable. Based on up to date experience, this means that, e.g. for a ten year contract it is not possible to just agree to a base price with escalation, since on that basis in the long run the risk of a significant deviation from the market conditions cannot be avoided, which in turn leads to new instabilities and can seriously disturb relations between supplier and consumer. I believe regularly renegotiated prices based on criteria acceptable to both parties are the best formula. The producer has to be protected against serious losses and the consumer should not be confronted with prices, so far above market conditions that this cannot longer be justified towards his customers, shareholders and authorities.

The instrument of longterm contracting, covering the baseload (e.g. the demand of all stations already in operation) should be supplemented by medium term contracts in order to counterbalance minor variations in demand which cannot be avoided and which are not predictable on a longterm basis. Furthermore, spot purchases should, as far as possible, be made to a limited degree and only to counterbalance sudden supply interruptions and to make use of very favourable purchasing conditions. The latter as a means to influence the market in an anticylic way: Buy when it's cheap, don't when its expensive and scarce. Utilities had a tendency in the past to do it the other way round!

I do hope and believe that both of us -consumers and producers- are able to do better in the future than we did in the past.

Thank you very much.

Figure 1

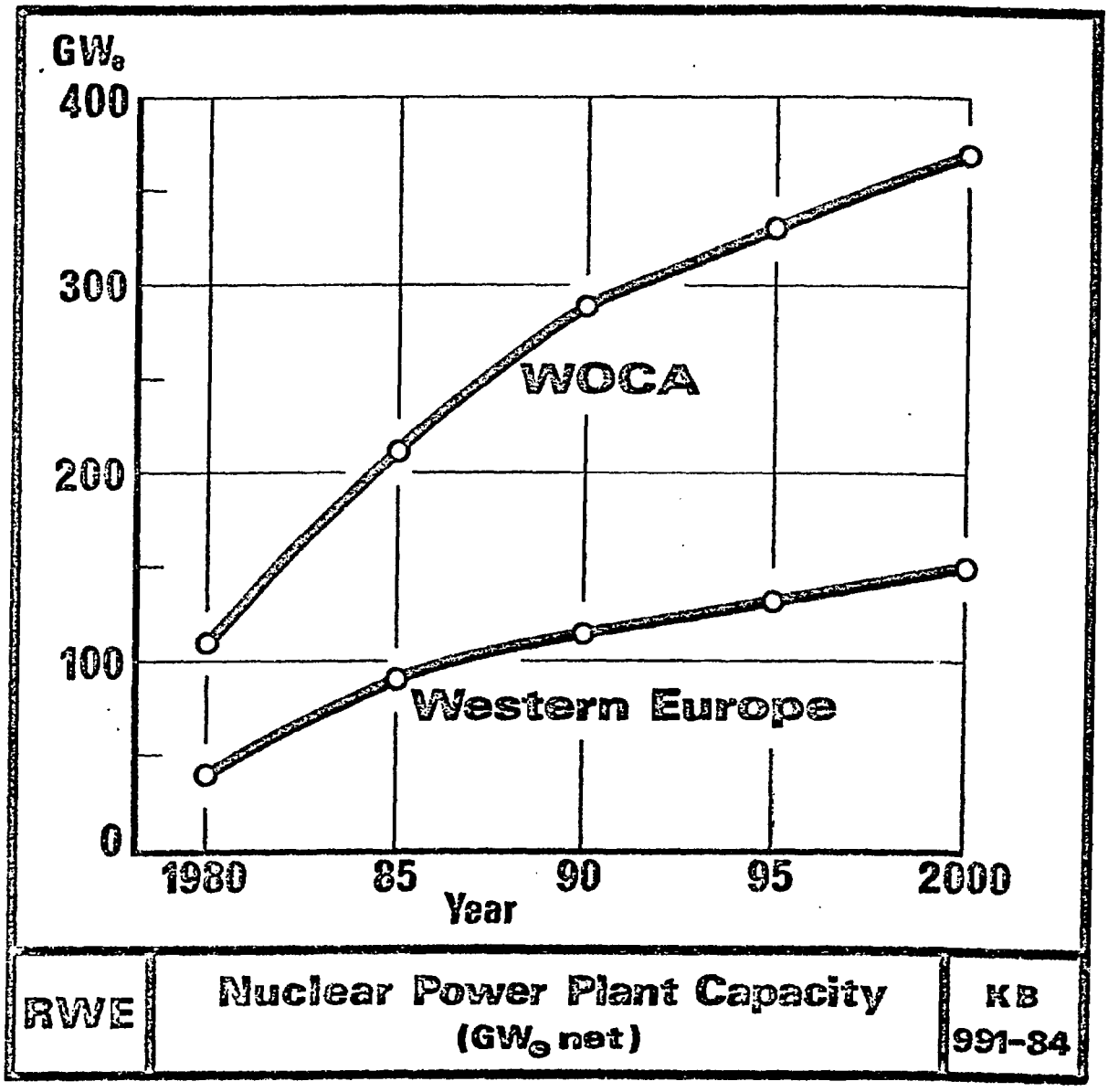
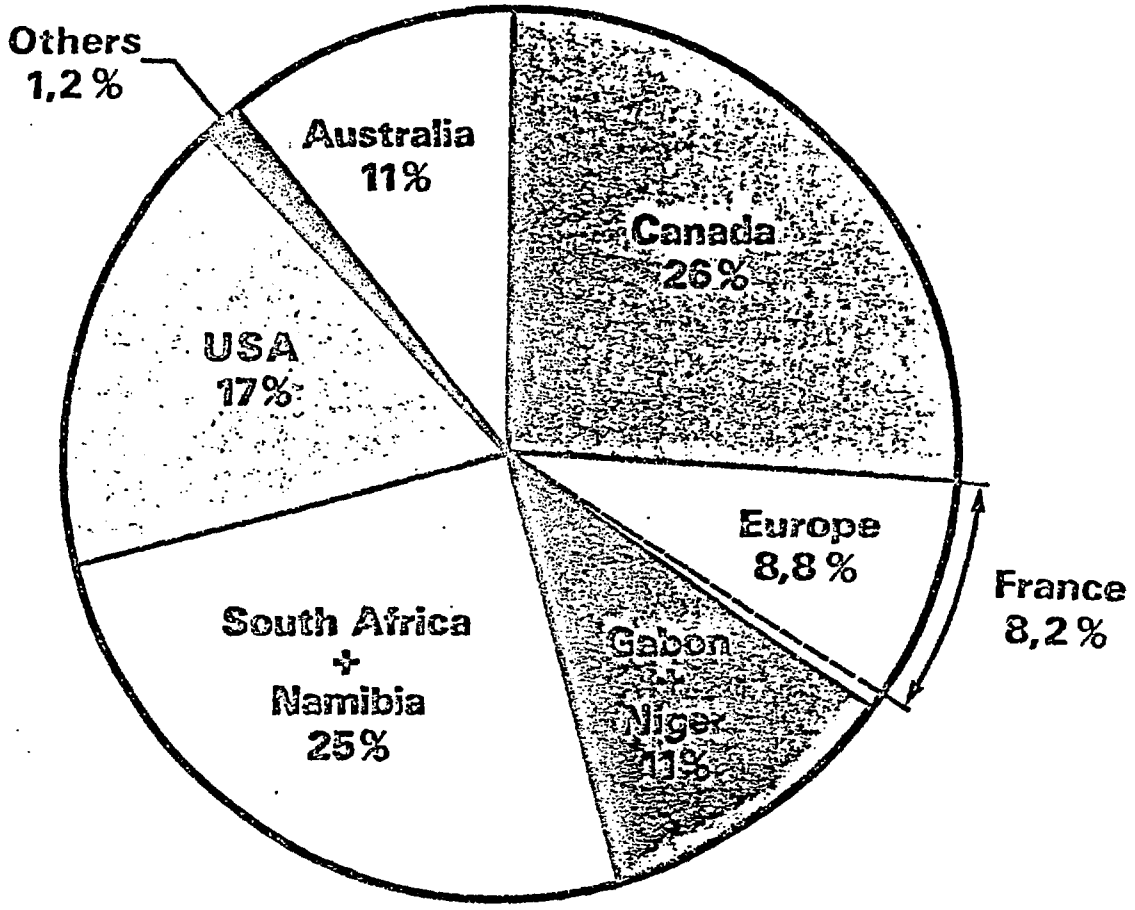

GWe
400
300
200
100
0
WOCA
Western Europe
1980
85
90
95
2000
Year
RWE
Nuclear Power Plant Capacity
(GWe net)
KB
991-84

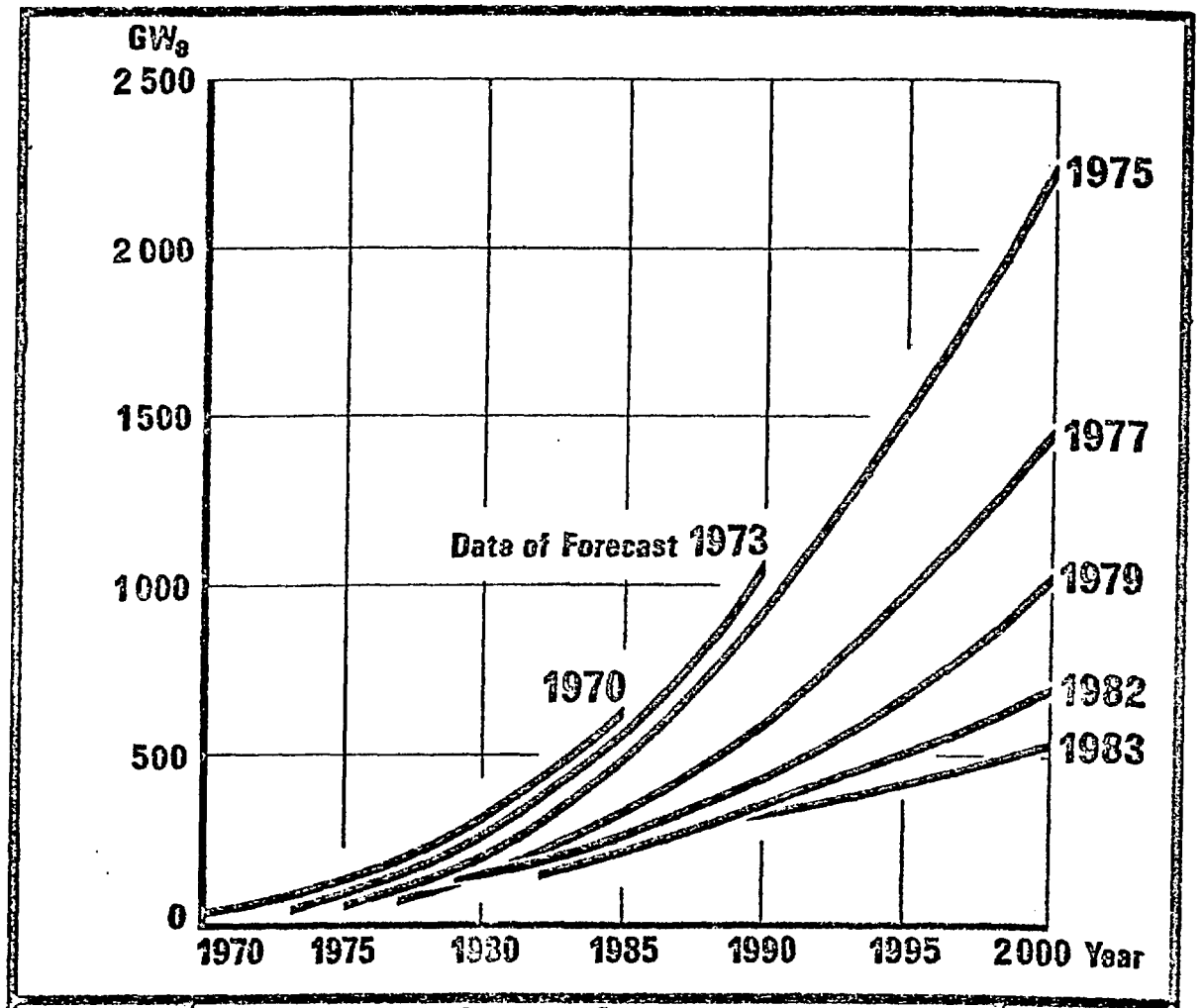
Figure 2



100 % = 39500 t U/a

RWE	Estimated Uranium Production (WOCA, 1984)	KB 990-84

Figure 3

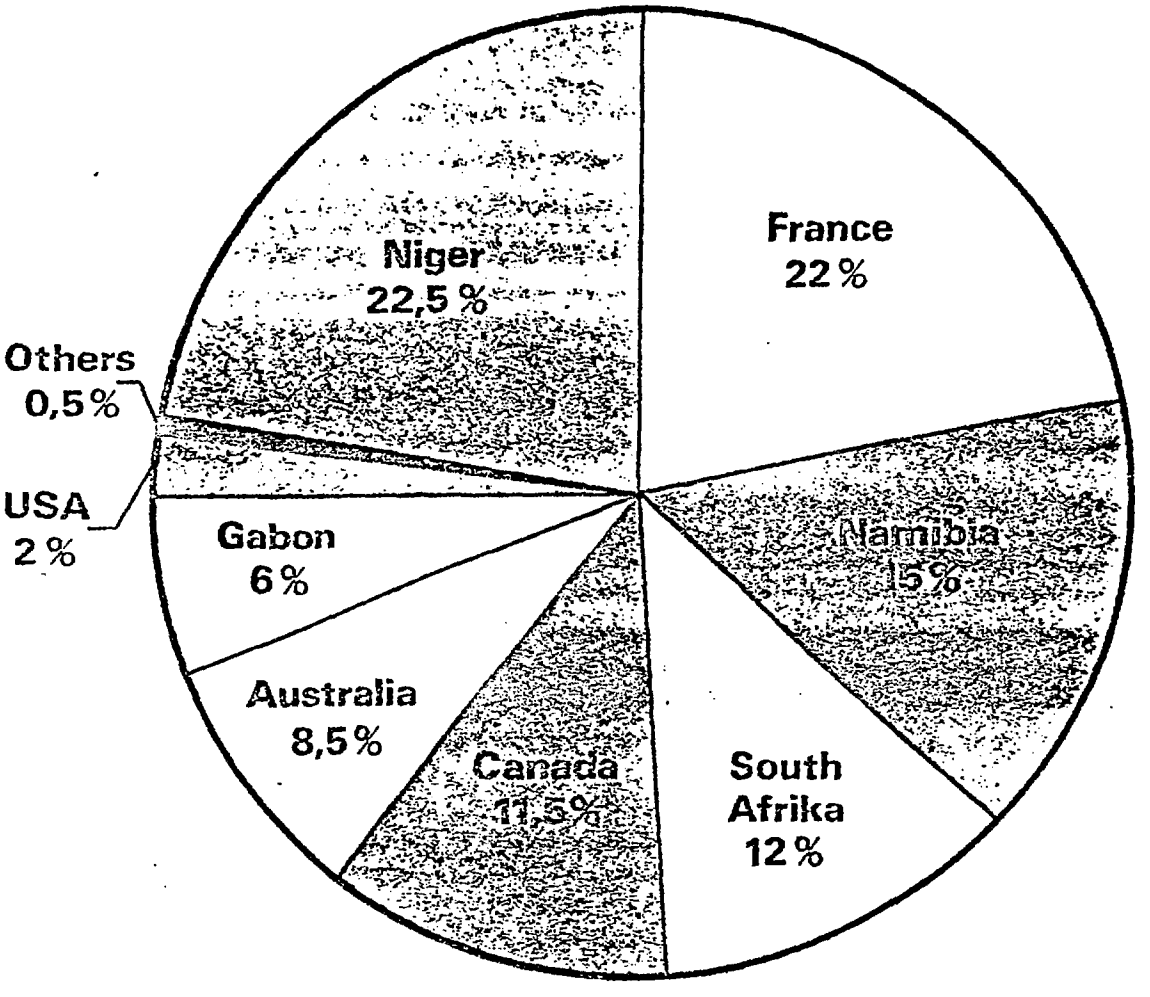


RWE

Nuclear Power Growth in WOCA
OECD/NEA Forecasts
(the 1975, 1977, 1979 and 1982 curves represent the averages of the low and high growth projections)

KB
939-34

Figure 4

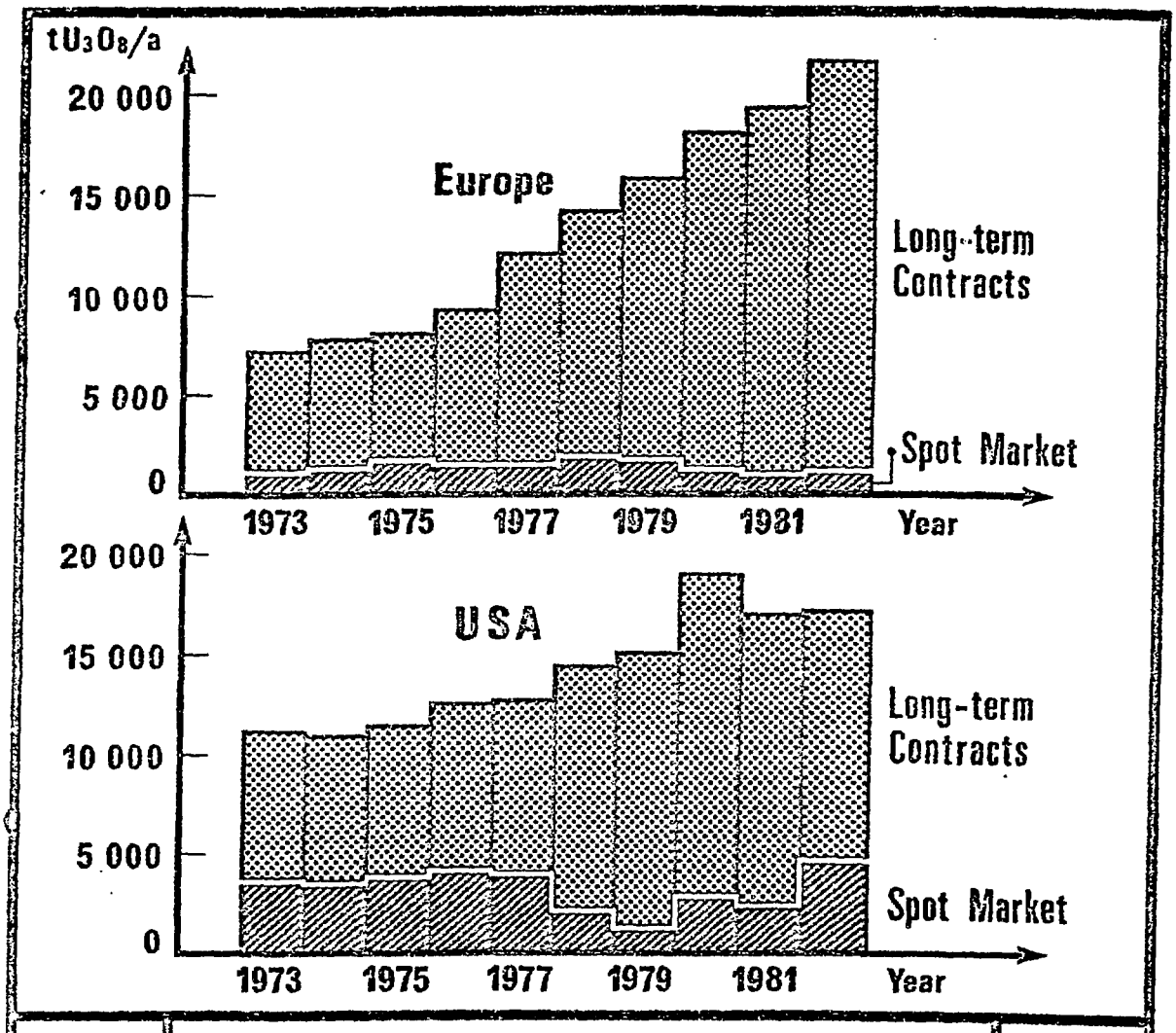


RWE	Orgins of Natural Uranium Supplies to the European Community in 1983	KB 993-84

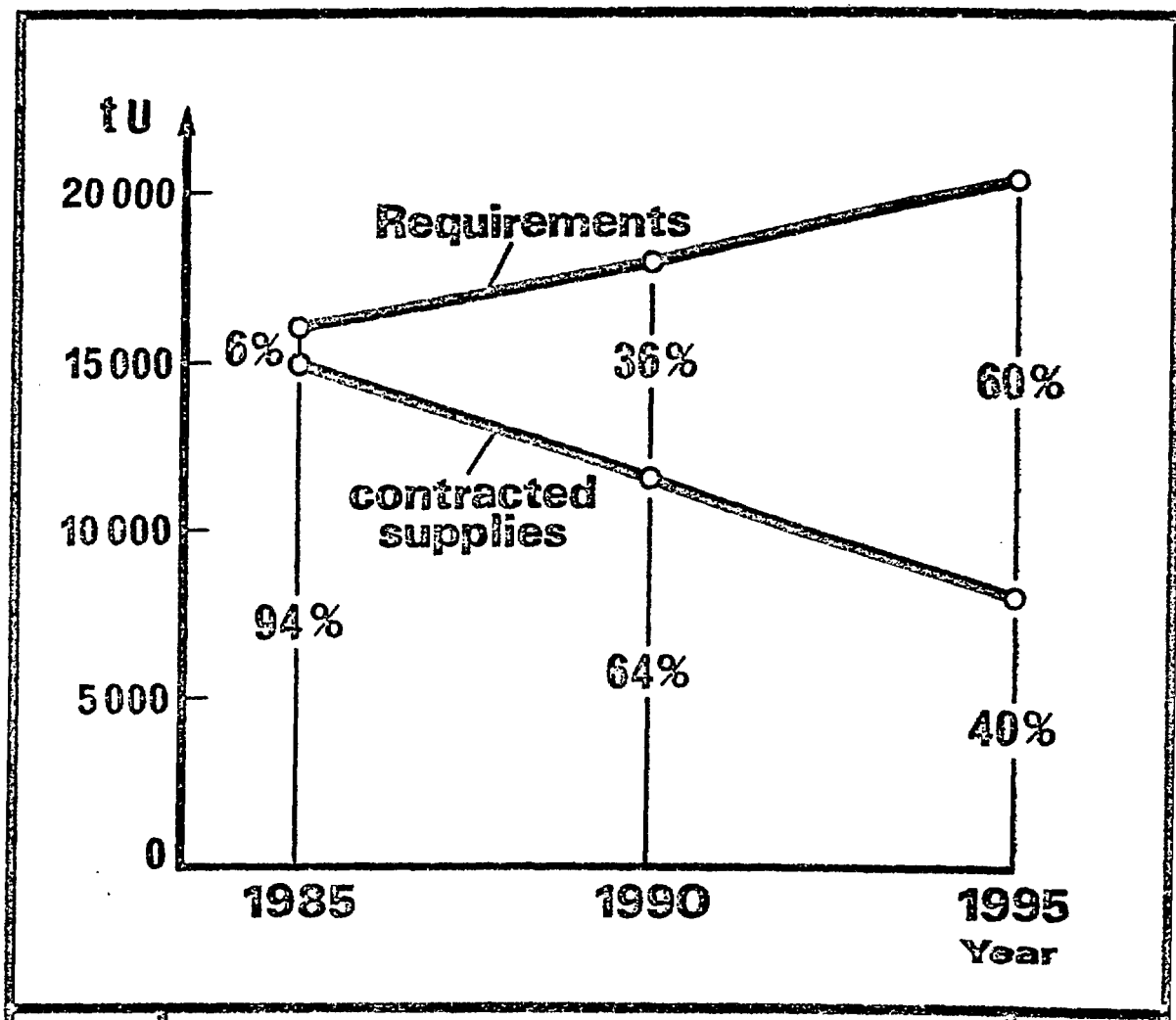
Figure 5

Fuel	Stockpile (1000 t)	Value (bn.$)
Natural Uranium	22	1,7
Fuel Oil	230000	48
European Hard Coal	330000	35

RWE	Comparison of 2-Years Forward Stockpile for 75 GW_e at 6500 h/a	KB 992-84



RWE	Natural Uranium Transactions	KB 615-82



RWE	Natural Uranium Requirements of Western Europe compared to contracted supplies	KB 994-84