

CONSEIL DE L'ATLANTIQUE NORD  
NORTH ATLANTIC COUNCIL

EXEMPLAIRE  
COPY N°

170

ORIGINAL: FRANCE  
14th April, 1969

NATO CONFIDENTIAL  
WORKING PAPER  
AC/89-WP/271

SUB-COMMITTEE ON SOVIET ECONOMIC POLICY

ELECTRICAL ENERGY IN THE PEOPLE'S DEMOCRACIES

Note by the French Delegation

If they are not to run into serious difficulties, the People's Democracies must have sufficient electrical energy resources to meet the targets they have set themselves in the priority development of industry and transport. In fact, between 1960 and 1967, the installed capacity rose by 84%. The rate of production growth, which is about 10% per annum, will probably at least be maintained in the coming years, for the unit capacity of the power plants, most of which are steam generating stations, is steadily increasing (550 megawatts - MW in 1960 and 1,400 MW in 1967).

2. As regards distribution, each of the People's Democracies is engaged in integrating its various systems to form a unified national system. At a higher level, the international network "MIR", which, operating from the USSR, connects up the national systems (excluding Yugoslavia) enables exchanges of current to be made on an increasingly large scale.

A. Production and installed capacity: see Annex A.

3. The global production of the People's Democracies rose to almost 220 milliard KWh in 1967, as against 123 in 1960(1). In 1960, the Soviet Occupied Zone of Germany, Poland and Czechoslovakia were alone responsible for 77% of the total production; in 1967 they were still producing 68% of the total.

4. The more intensive electrification policy pursued by Bulgaria, Rumania and Yugoslavia is contributing to the gradual reduction of this difference, whereas Hungary seems to be increasingly reliant on imported Soviet current (1.4 milliard KWh in 1966, i.e. approximately 10% of its production). The mean per capita production figure was 1,808 KWh in 1967(2), the two extremes being 3,494 KWh in the Soviet Occupied Zone of Germany and 937 in Yugoslavia. The installed capacity rose from 25,639 MW in 1960 to 47,210 in 1967.

---

(1) USSR: 292 milliard KWh in 1960  
589 milliard KWh in 1967

(2) USSR: 2,495 KWh per capita. France: 2,290 KWh per capita.  
USA: 6,966 KWh per capita

NATO CONFIDENTIAL

B. Steam Generating Stations:

5. Steam generating stations greatly predominate, and in most of the countries under review they are responsible for virtually all the production. The majority operate on hard coal and lignite, although there are also stations running on diesel oil and a few which use gas.

6. With regard to capacity, the Soviet Zone and Poland are at present in the lead, ahead of Czechoslovakia and the other People's Democracies, some of which have ambitious programmes in hand. The main steam generating stations are as follows(1):

- in the Soviet Occupied Zone of Germany: Lubbenau (1,300 MW), Vetschau (1,200 MW), Boxberg (3,000 MW, under construction);
- in Poland: Turon (1,400 MW), Adamow (600 MW), Konin (583 MW), Lagisza (planned capacity 1,225 MW) and Skawina (500 MW);
- in Czechoslovakia: Vojany (600 MW, will be raised to 1,300 MW), Tusimice (660 MW), Pocerady (800 MW), Ledvice (640 MW) and Kadan (610 MW);
- in Hungary: Borsod (202 MW), Oroszlany (200 MW), Gyongyos (800 MW, under construction) and Szazhalombatta (600 MW, under construction);
- in Rumania: Ludus (800 MW), Craiova (600 MW), Borzesti (425 MW) and Paroseni (350 MW, to be raised to 600 MW);
- in Bulgaria: the Maritza Iztok complex (three power stations: one of 500 MW, one of 600 MW and one of 800 MW, which is under construction), the power stations at Varna (600 MW, under construction), Rousse (280 MW) and Devnja (160 MW);
- in Yugoslavia: Kosovo (350 MW, to be increased to 2,000 upon completion), Obrenovac (400 MW, under construction), Sostanj (275 MW, to be raised to 533 MW) and Belgrade (200 MW).

C. Hydropower Stations:

7. The hydropower stations do not generally have a very high capacity. In Hungary they are so small as to be negligible. Yugoslavia, on the other hand, is the only country where the figure for hydropower production (10.6 milliard KWh in 1967) is higher than for thermal power production (8 milliard KWh). In all, hydropower only represents 9% of electrical energy production and its share in the energy balance (sources of primary energy) is minute.

---

(1) pro mem. USSR: Pridnieprovsk (2,400 MW); USA: Ravenswood (1,800 MW)

8. Rumania and Yugoslavia are jointly constructing, with the help of the USSR, the Iron Gates power station which, with 2,050 MW, will be the fifth largest in the world. Its completion is scheduled for 1972. Some of the main hydropower stations are listed below(1):

- in the Soviet Occupied Zone of Germany: Hohenwarta (320 MW), and the Markersbach Project (1,000 MW);
- in Poland: Solina (120 MW), Wroclawek (168 MW) and the Zydlow Project (150 MW);
- in Czechoslovakia: Orlik (250 MW), Lipno (120 MW);
- in Hungary: no power station exceeds 12 MW;
- in Rumania: Arges (220 MW, built in co-operation with Yugoslavia), Bicaz (210 MW) and Lotru (500 MW, under construction);
- in Bulgaria: Ivajlovgrad (114 MW), Kirdjali (106 MW) and Pescera (124 MW);
- in Yugoslavia: Buk Bijela (344 MW, to be raised to 500), Bajina Basta (330 MW), Dubrovnik (208 MW), Jablanica (144 MW), Mratinje (214 MW, under construction), Orlovac (237 MW, under construction), Perucica (226 MW), Senj (216 MW) and Split (216 MW).

D. Nuclear Power Stations:

9. Only the Soviet Occupied Zone of Germany possesses a nuclear power station which has been in operation since 1966: Rheinsberg (70 MW). A second is under construction near Lubmin. It should be producing 800 MW by about 1975.

In Czechoslovakia, the Bohunice power station (150 MW) is scheduled to start operating in 1969. It will be followed by Bohunice II (200 MW) and Bohunice III (500 MW) which are at the planning stage.

Hungary is planning the construction in 1969 of the Paks power station (800 MW) which is scheduled to start operating in 1975.

In Bulgaria, work on the Kozloduj power station (800 MW by about 1975) is expected to start shortly.

10. Nuclear power plants in the other People's Democracies are still at the planning stage:

---

(1) pro mem. USSR: Bratsk (4,500 MW), Krasnoiarsk (600 MW).

NATO CONFIDENTIAL  
AC/89-WF/271

-4-

Poland is studying a 1,000 MW power station project for 1975-1980.

Rumania is planning a 500 to 1,000 MW power station after 1975.

Yugoslavia is considering the construction of a 300 MW power station near Videm Krsko in Slovenia (after 1975).

E. Distribution and exchange of current:

11. In order to make the optimum use of their electrical energy resources and to offset production deficiencies (neglected areas, seasonal drops...) the People's Democracies have started by planning to connect up their regional networks. The aim of each country at present is the complete integration of its regional systems to form a unified national system.

12. Further, they began very early on to effect exchanges of current. Thus, the Soviet Occupied Zone of Germany was connected to Poland as far back as 1950, then in 1952 to Czechoslovakia and Hungary, although it did not supply the latter with current until 1956. The total volume of exchanges through the five transmission lines in existence since 1955 has risen to 562 million KWh. The first exchanges between Poland and Czechoslovakia took place in 1959; the exchanges were increased between the Soviet Occupied Zone of Germany, Poland and Czechoslovakia in 1960. The interconnection of the systems of the People's Democracies, with the exceptions of Bulgaria and Yugoslavia, was carried into effect in 1962.

F. "MIR" International Network:

13. The year 1962 also marked the inauguration of the "MIR" international network which starts from the Soviet electrical energy centre of Mukatshevo. The whole of the Ukrainian distribution network, which represents almost a fifth of the capacity of the Soviet Union, is linked to Mukatshevo.

14. Mukatshevo - Sajoszeged (Hungary) was the first connection to be established in 1962 by two 220 KV lines. The following years saw the construction of the Mukatshevo - Lemesany line in Czechoslovakia (380 KV) and the Mukatshevo - Ludus line in Rumania (400 KV). In 1967, the laying of the 200 KV Craiova - Bojcinovci line at last linked Bulgaria to the "MIR" network. A new 400 KV line between the USSR and Hungary was recently completed and a 400 KV direct line between the USSR and Bulgaria is planned.

15. All the connections established before 1962 are now linked to the "MIR" network, the installed capacity of which today exceeds 40,000 MW. In 1968 the exchanges effected by this network involved over six milliard KWh and this figure will undoubtedly increase in the next few years. Yugoslavia is not connected to the "MIR" network.

NATO CONFIDENTIAL

-4-

G. Prague Regulating Centre:

16. The Prague regulating centre, which operates under the authority of a Board consisting of representatives from the member countries, was set up to direct and co-ordinate the activity of the power stations of the various networks and to regulate the distribution of current. It is financed by payments fixed pro rata to participation in the exchanges, and the expenditures are covered by a special budget which is ratified by the Board.

17. The main tasks of the regulating centre are as follows:

- study of the output rating of the power systems;
- co-ordination of inter-network current distribution charts;
- use of reserves based on the demand and supply figures;
- measures to be taken in the event of failures;
- technical co-ordination (relays, automatic systems, remote control).

H. Conclusions:

18. The People's Democracies are stepping up their efforts in the field of electrification both by developing, at national level, the construction of increasingly powerful plants, and by pursuing, at supranational level, the inter-connection of their distribution networks.

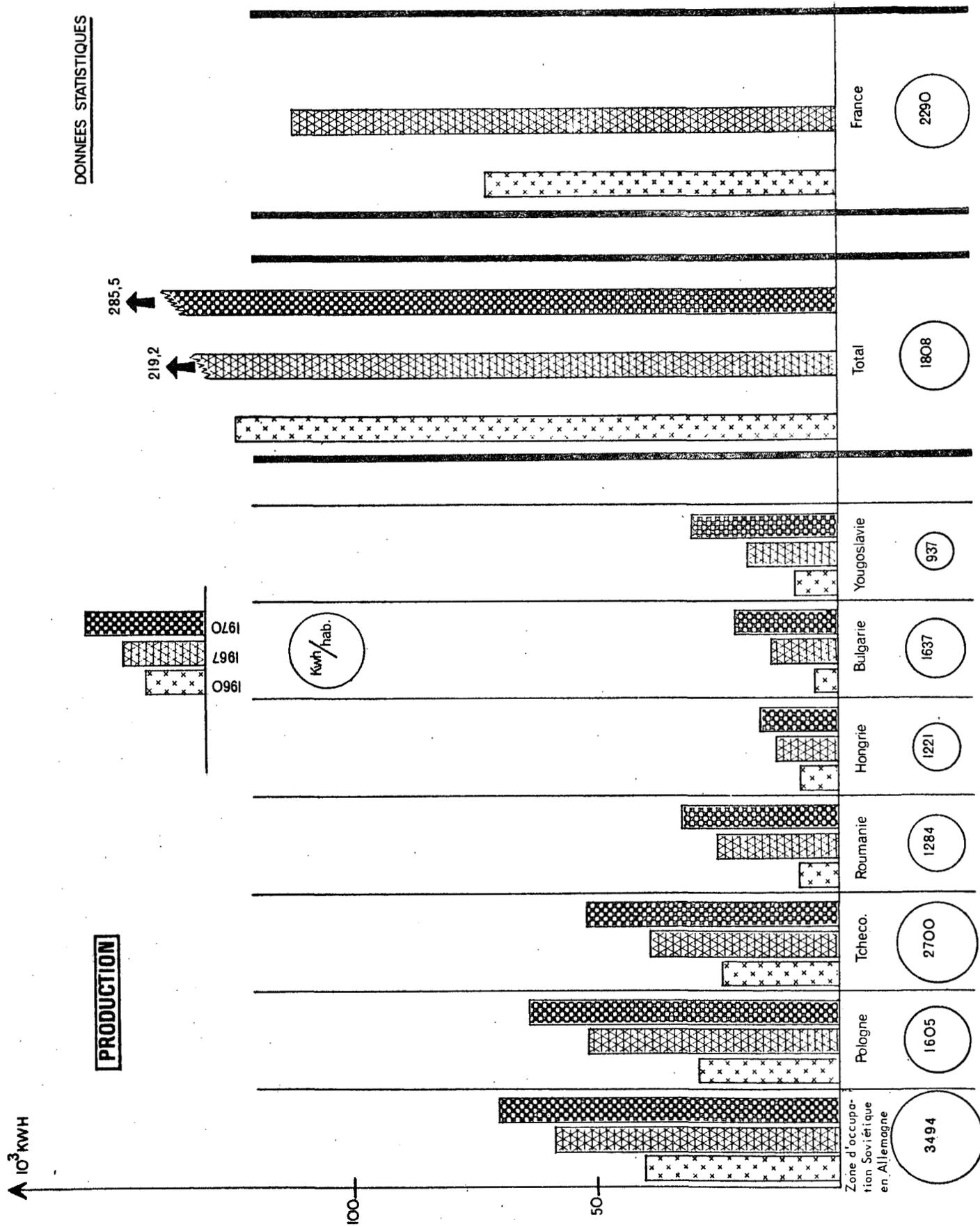
19. Evidence of this determination to make progress is to be found in the economic planning forecasts(1), the ambitious goals of which would seem difficult to achieve in Czechoslovakia, Hungary and Yugoslavia.

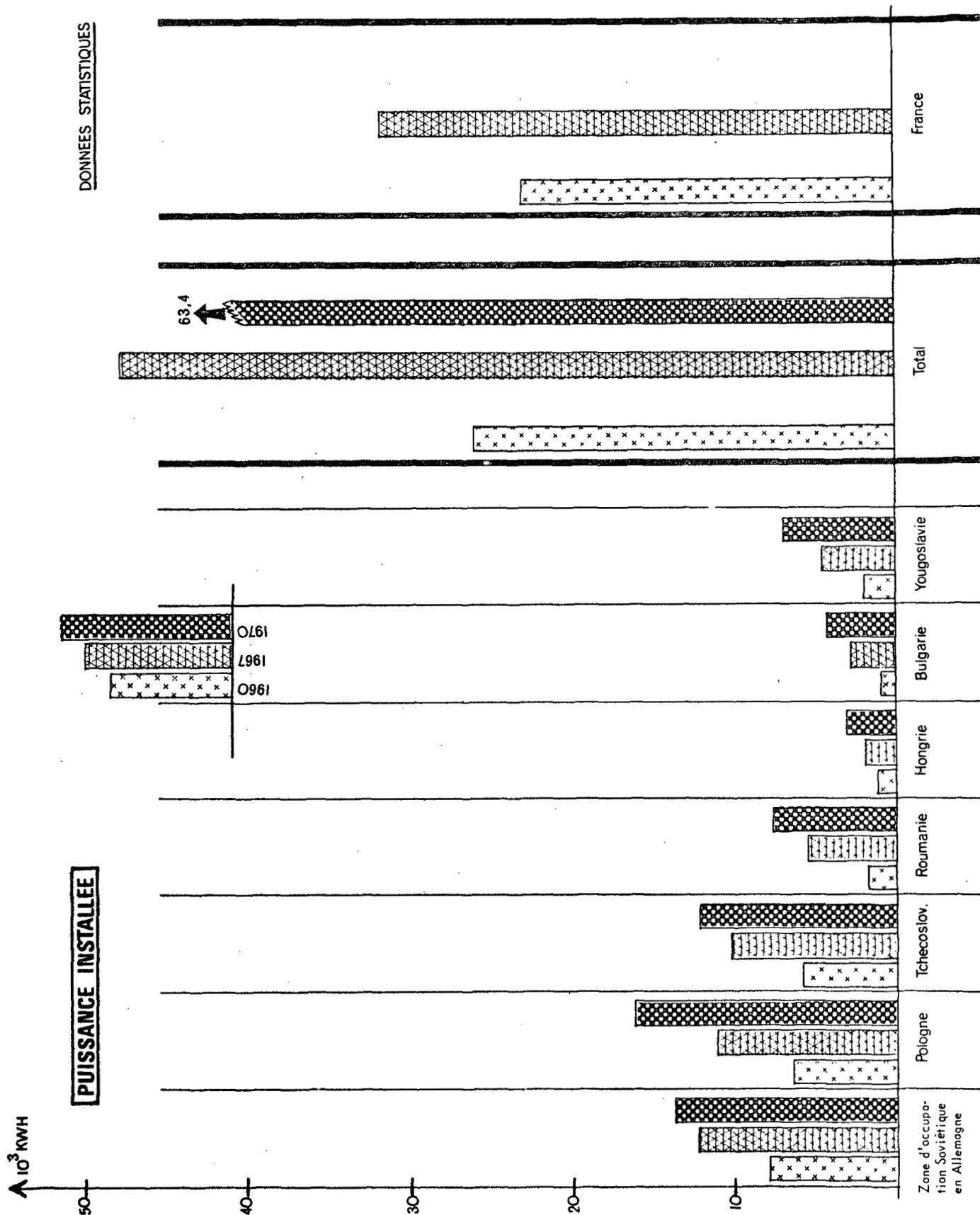
20. Lastly, it should be noted that in exchange for the undoubted advantages it offers the participating countries, the "MIR" network enables the USSR to extend the control it already exercises over other sources of energy and thereby constitutes one of the instruments of Soviet hegemony in Eastern Europe.

OTAN/NATO,  
Brussels, 39.

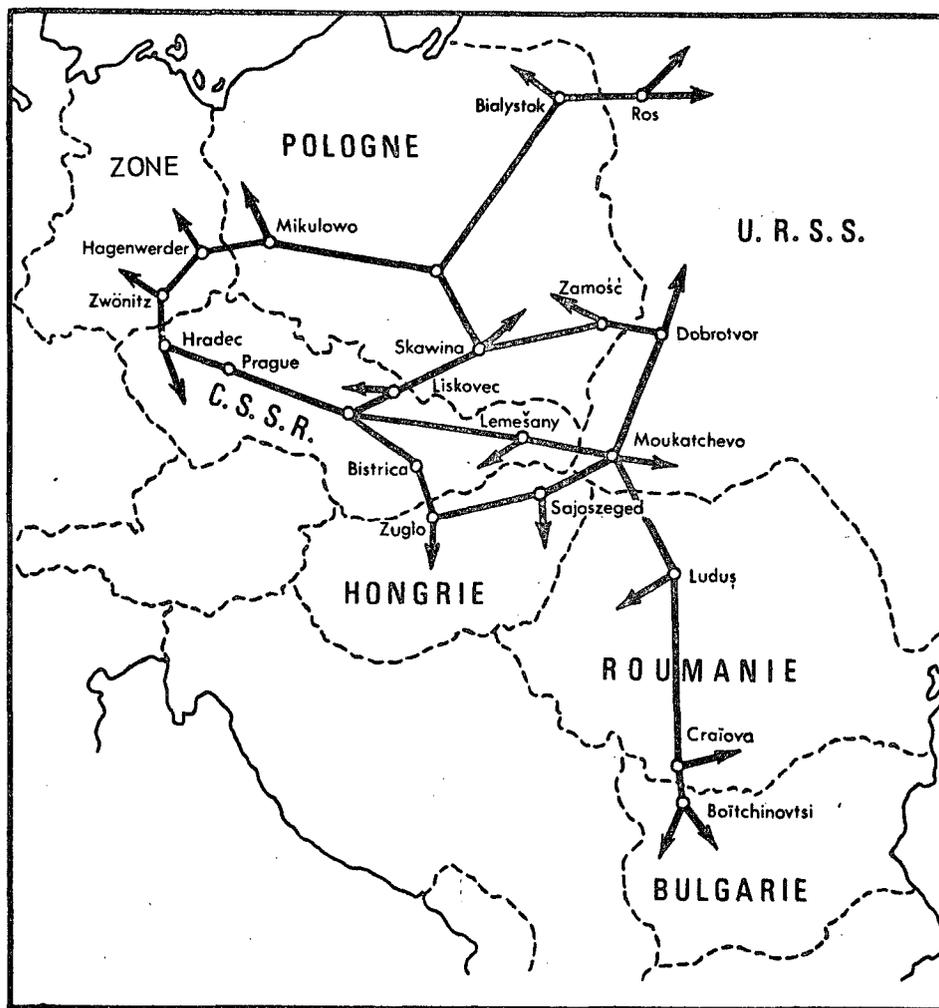
---

(1) See Annex A.









Le réseau international "MIR"