Chart 3 — USSR Oil and Gas Pipeline Construction

(THOUSANDS OF KILOMETERS)

	8TH 5 (YEARLY AVE.)	9TH 5YP (YEARLY AVE.)	1975	1976	1977 (PLAN)	10TH 5YP (YEARLY AVE.-PLAN)
OIL & OIL PRODUCTS MAIN LINES	2.0	4.5	4.8	2.7	4.0	
GAS MAIN LINES AND BRANCHES	5.0	6.5	7.3	5.5	6.5	7.3

Sources: **SSSR v tisfrakh 1975**
Izvestia. Jan. 23, 1977
Ekonomicheskaya Gazeta

was devoted to the tasks of scientists in energy development.

Coal Industry Meets Construction Problems

Although the share of coal in Soviet energy production will decline during the 10th 5YP to approximately one quarter of the total in 1980, the planned 22 million ton increase in production for 1977 is the greatest in the past decade. While the growth of coal exploitation is to be more moderate than that of the other fossil fuels — ranging between last year's low 1.5 percent and 3.8 percent annual rises during the 5YP — the 1976-80 coal quotas include coal for an increasing portion of electroenergy generation, where coal and coal-oil mixes will take over from oil and gas in many power plants. This means more oil available for export.

While the overall coal production plan was met in 1976 by the skin of the teeth, 28 percent of the mines were under. More productive mines balanced them out. More troublesome for the prospects of reaching planned growth levels in the next few years was the government's report that in the *majority* of coal mining areas the plan for capital construction for the coal industry was missed. The 1977 target has been set at new capacity to produce over 20 million tons of coal, which compares with the 1976 12.6 million tons new capacity, and 24.4 million tons in 1975, the last year of the 9th 5YP which averaged new capacity for 22.8 million tons each year.

The 1977 coal increase is assigned chiefly to Siberian regions such as the Kuznetsk basin (assigned 3.5 percent increase) and the new Kansk-Achinsk fields in Eastern Siberia (to rise 9.5 percent). Coal production in January 1977 was 61.8 million tons, or 8 percent of the year's goal.

— Rachel Berthoff

Reactors Without Naderites And Dams Without Snail-Darters

The most rapidly expanding sector of the Soviet energy industry is primary electrical power production, from nuclear and hydroelectric power stations. Together comprising two-fifths of new power capacity to be built in the 10th 5YP(see chart 4), nuclear fission and hydroelectric plants are to be producing 277 billion kilowatt-hours in 1980, an increase of 90 percent from the 1975 level. Their share in Soviet electricity generation will then be 20 percent, compared with 14 percent today (see graph 1).

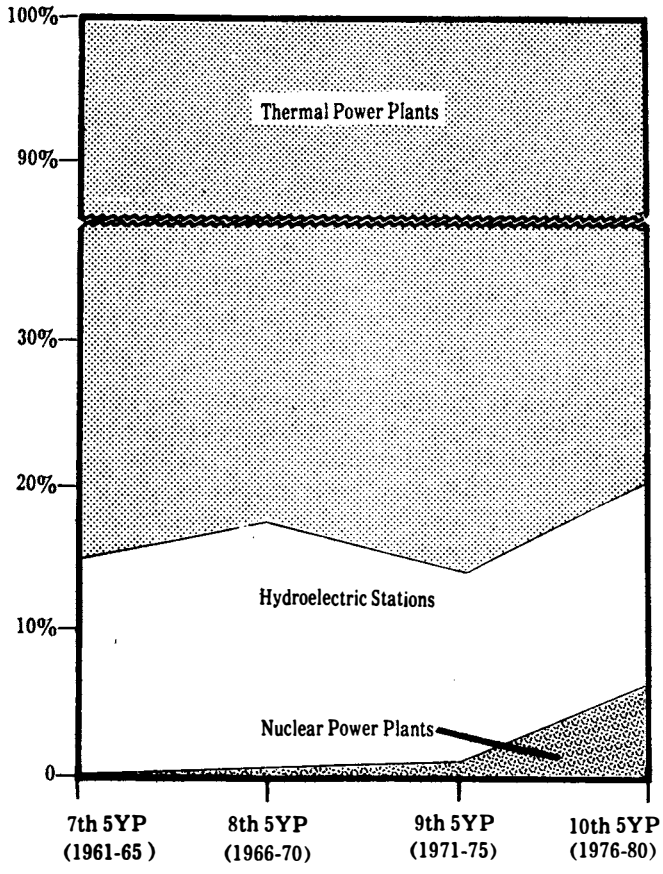
Whatever shortfalls may occur in meeting these goals, they will not be due to controlled environmentalists' demands such as those which have crippled United States fission power projects. For the USSR, these power sources are in the development plan to stay.

Fission for the European Section of the USSR

The oil-rich Soviet Union was slower than the U.S. to build nuclear reactors for electrical power during the 1960s, although it had one 600 mWe station operating in the Ural mountains already in 1958. Now there is a second plant in the Urals, three in the European part of the country (including the 2,000 mWe Leningrad giant), one in Armenia, and one on the Caspian Sea which runs

Graph I

Growth of Soviet Hydro and Nuclear Electric Power Production as Portion of Total Electric Power Produced



desalinization facilities. The three plants due to come on line during the 10th 5YP are in the European sections of the country, in the old industrial districts of Russia and the Ukraine. Other plants under construction and sites projected for the next decade are also in the western sections, except for one at Sverdlovsk in the Urals.

The 1976-80 planned take-off in fission power generation (from 1 percent to 6 percent of electricity) was motivated by the increasing cost of fossil fuel production from deposits farther to the north and east. The safely constructed nuclear plants are best located in the heavily settled western districts where industrial energy consumption is highest. The Soviets select unfertile land for construction sites, so as not to limit potential agricultural expansion.

The USSR has assisted in building nuclear power plants in Bulgaria, Czechoslovakia and the German Democratic Republic, and construction on a plant in Poland is slated to begin in this 5YP (Poland anticipates depletion of its vast coal reserves in the coming decades). By 1980 production from these plants will be nearly one-third the total USSR and Eastern European output.

Special developments for nuclear power in the 10th 5YP include completion of "Atommash", a factory for serial production of fission reactors and commissioning of a special university, the Institute of Atomic Power. The new school will be organized in Obninsk, a town south of Moscow where the Soviet Union's first laboratory for nuclear reactor development was established over two decades ago by Academician I.V. Kurchatov, the father of the Soviet program for peaceful utilization of nuclear fission as well as instigator of the country's controlled thermonuclear fusion research program. It will build on the Obninsk branch of the Moscow Physics and Engineering Institute, raising that institution's student body from 1200 to 3500.

Siberian Hydroelectric Power

The expansion of hydroelectric plants in the current 5YP is concentrated on the powerful Siberian River system of the Yenisei and its tributary Angara. Here, where there are already three producing power dams, five more are on the way during the 10th 5YP or the 1980s. Spaced at intervals along the Himalayan-fed rivers, these dams are the focal points of the giant industrial complex of Eastern Siberian development which encompasses several new cities and the Baikal-Amur railroad to the Pacific Ocean. This comprehensive project, rather than a narrow specialization on the power resources of the area, is the distinguishing characteristic of the USSR's Siberian development perspective. Sayany, for example, a comparatively small area on the southern Yenesei River will house the Sayano-Shushensk hydroelectric station, the largest in the world. Around that center, timber, iron ore, non-ferrous metals, alumina, coal, asbestos, and phosphate will be exploited. When the project is completed 15 years from now, the industrial complex outside the central city of Abakan will have 120 enterprises including a turbogenerator plant, high-voltage equipment factories, power transformer and cable manufacturing, a foundry, an electrical engineering institute with nine departments, and welding, stamping, and metal works to service the hydroelectric plant and other power facilities in Siberia. A primary difficulty will be finding workers to fill all the complex's jobs.

Chart 4
Introduction of New Electric Energy Generating Capacity (MWe)

	7th 5YP (1961-65)	8th 5YP (1966-70)	9th 5YP (1971-75)	1975	1976	10th 5YP (1976-80) (plan)
Total new capacity	48,000	54,600	58,000			71,000
Yearly average (1975, 1976 shown exactly)	9,600	10,900	11,600	13,000	11,900	14,200
Atomic power stations			3,600			15,000
Hydroelectric stations			9,100			13,000

Sources: *SSSR v tsifrakh, Izvestia, Ekonomicheskaya Gazeta*