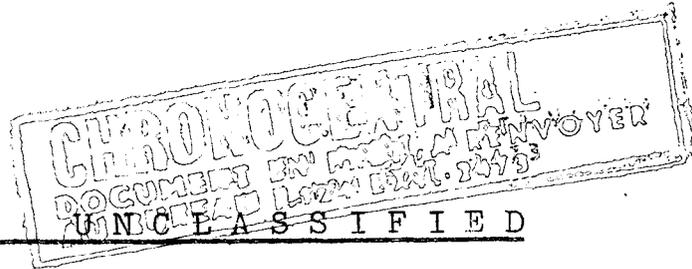


CONSEIL DE L'ATLANTIQUE NORD
NORTH ATLANTIC COUNCIL



N A T O

ORIGINAL: FRENCH
24th April, 1974

ACTION SHEET
C-M(74)14

ROUND TABLE ON THE NATURAL RESOURCES OF
SIBERIA

Action Sheet

At its meeting on 15th March, 1974, the Council took note of the document C-M(74)14.

2. See C-R(74)12, Item IV, paragraphs 55 to 64.

(Signed) G. SEKERIS
Executive Secretary

Note: This Action Sheet is part of, and shall be attached to, document C-M(74)14 as the top sheet

N A T O U N C L A S S I F I E D

CONSEIL DE L'ATLANTIQUE NORD
NORTH ATLANTIC COUNCIL

cc.

CHRONOLOGICAL
DOCUMENT EN PREP. A RENVOIE
BUREAU 1.124 EXT. 7472

N A T O U N C L A S S I F I E D

ORIGINAL: FRENCH
11th March, 1974

DOCUMENT
C-M(74)14

ROUND TABLE ON THE NATURAL RESOURCES OF SIBERIA

Note by the Secretary General

This document has been prepared, on his own responsibility, by the Director of Economic Affairs, in his capacity as organizer of the Round Table on the Natural Resources of Siberia held at NATO Headquarters, Brussels, from 30th January to 1st February, 1974.

I am submitting it to the Council for the information of Permanent Representatives. However, attention is drawn to the fact that since all countries have not yet agreed in principle to its publication, this paper should be considered as confidential.

(Signed) Joseph M.A.H. LUNS

NATO,
1110 Brussels.

N A T O U N C L A S S I F I E D

ROUND TABLE ON THE NATURAL RESOURCES OF SIBERIA

Report by the Director of Economic Affairs
Chairman of the Round Table

PART I: SIBERIA'S BACKGROUND: BASIC FACTS

1. Siberia, constituting over half the area of the Soviet Union, remains one of the world's great frontier areas containing rich and still unexploited natural resources, many of which have still to be surveyed.

2. From a geographic point of view, the best comparison is probably with Canada as Siberia is a succession of prairie land, forest, forest-tundra, tundra and vast Arctic regions which might contain considerable mineral resources. In administrative terms, it is divided into three main economic planning regions: Western Siberia, Eastern Siberia and the Far East.

3. There is little doubt that the Siberian area contains huge quantities of all classical forms of energy - oil, natural gas, coal, uranium, timber and hydropower. Currently, Western Siberia is the region undergoing most extensive exploitation together with certain Far East areas. Eastern Siberia remains a huge resources question mark, i.e. it is an almost untapped region which presumably contains enormous mineral deposits.

Hindrances to the Exploitation of Siberian Resources

4. The obstacles encountered in the exploitation of Siberian resources are diverse: clearly, Siberia's poor infrastructure, the transportation gap, the manpower problem and the critical issues of huge distances and harsh environment make development of Siberia's resources both problematical and highly expensive.

A. Infrastructure

5. The infrastructure of Siberia is, of course, extremely underdeveloped. This is one of the greatest drawbacks to exploitation, since it not only deters settlers, but also acts as a brake even on the exploitation of known resources. It is indicative of the previous relative lack of Soviet interest in Siberia that capital investment in Siberia by planning periods between 1918 and 1969 registered scarcely any perceptible increase. On average, over the whole period, it reached about 15% of total investments, peaking to 18% during 1941-1946. The present 9th Five Year Plan appears to show evidence of increasing Soviet interest in Siberia.

C-M(74)14

-3-

6. Current standards of housing, education, medical care and other primary services in Siberia reflect past patterns of resource allocation. With investment plans geared to quick returns, available resources have been assigned to purely production-oriented projects. Even when precedence was accorded to infrastructural development, the Siberian priority was often ignored. The continuing low priority granted to non-productive investment in Siberia is primarily due to the relatively short-term horizons of the medium-term plans. Perhaps, however, the provisions of the fifteen-year long-term plan for the period 1976-1990 "in process of completion", may well be more concrete as regards future Siberian infrastructure developments.

B. Transport:

7. The railway network takes about 80% of freight in Siberia and the USSR generally. Consequently the Trans-Siberian railway is absolutely vital to the development of Siberia's resources, constant improvements being made to it such as double tracking, and the introduction of diesel locomotion and electrification. The immense distances and very nature of the terrain explain to some extent lagging economic development in Siberia: an expert's estimate for building one mile of narrow road is \$500,000. As no usable road system exists in those Siberian areas where resource development is projected or underway, aircraft are a primary form of transporting heavy equipment and manpower.

8. In addition, constant efforts are being made to develop the pipeline network for the transportation of oil and natural gas, the development of Vladivostok is being actively pursued and there has been a slow improvement of the still very embryonic handling and storage facilities. Despite the renewal of interest in Siberia's future, the impression gained from an assessment of Soviet sources on Siberian infrastructure development is that, as elsewhere in the Soviet Union, the authorities are adopting a piecemeal, stopgap approach.

C. Manpower:

9. The total population of Siberia is put at just over 25 million people, some 10% of the total Soviet population. This unequivocal under-population of the area represents an almost intractable problem for the Soviet planning authorities in their attempts to inject sufficient quantities of skilled manpower into the region.

10. For over forty years, the Soviets have extended material incentives in order to attract and retain immigrants in the harsh regions of the Siberian Far North and the Far East. The further evidence of the Soviet Government's desire to inject some demographic stability into Siberia is the establishment of at least 14 regional units located around specific resource areas. Twelve of these have, in fact, been created in regions bordering on China. In climatic terms, the border areas constitute a drawing point for settlers, although the underlying political motivations for encouraging immigration to this area cannot be ignored. The authorities originally projected a population upturn in Siberia from its current 25 million to about 60 million by the end of this century. The current rate of population growth is unlikely to reflect more than 40%-50% of that figure by the year 2000.

11. Although urbanization is rising, and there are a number of industrial and military concentrations scattered throughout Siberia, in view of the difficulties created especially by the unpleasant environmental factors, it is not surprising that the development strategy thus far employed in many areas of Siberia has tended to favour the so-called "watch and expedition" method over the adoption of permanent settlements. One such approach is to fly in groups for 2-3 week work periods from support bases in the South.

12. Again, although in the Arctic circle wage rates in the "hardship posts" are up to three times as high as in Moscow, in the relatively "softer" West Siberian regions, the average nominal wage level has exceeded only slightly that for the RSFSR as a whole. Although money earnings in Siberia remain above the All-Union level, the supply of consumer goods and services has generally been well below average and more expensive.

D. Environment:

13. Although certain areas of Western Siberia and even of Eastern Siberia lend themselves to temperate regional activity such as wheat growing and cattle raising, most of Siberia's environmental conditions are extraordinarily harsh and variable, temperatures ranging between such extremes as -80° to +90° Fahrenheit. As the Soviet attempt to push industrial activities further north, the soils and water resources of that part of Siberia become particularly vulnerable to pollution by oil and industrial drainage because of the low-level of biological activity.

C-M(74)14

-5-

14. A particularly serious environmental drawback is represented by the large distances over difficult terrain, needed firstly to move in the necessary equipment for prospection and then production, and secondly to transport the resources obtained, such as coal, copper, oil, natural gas, timber, etc. For instance, the distance between Tiumen and Nakhodka in the Pacific is about 7,000 km, and that from the northern gas fields to Murmansk about 2,500-3,000 km. A further graphic example of distance is the huge expanse which coking coal must traverse from the Kuznets basin to the Pacific coast, en route to Japan, i.e. 4,500 km.

15. Despite increased attention to environmental protection (e.g. the preoccupation whether Lake Baikal will be able to retain its unique complex ecology), in general, whenever production imperatives have clashed with environmental considerations in the USSR, the latter have been overlooked. The future exploitation of Siberia will undoubtedly have an impact on the ecological equilibrium in many areas of that part of the world, but it is impossible to say how or if the Soviet planners will be able to reconcile economic imperatives and environmental protection. In this context, the Soviet Authorities are seriously considering the diversion of water from the Ob river, in Western Siberia, 2,000 miles to drought-afflicted Khazakstan. This scheme, while of obvious value in the agricultural sector, carries with it certain environmental risks which apparently have not yet been fully evaluated.

E. Political considerations:

16. Mention has been made above of Soviet attempts to settle the border areas between Siberia and China. There is a large defensive-political element in this project since in view of exacerbated Sino-Soviet tensions based on Chinese territorial claims, the South Eastern part of Siberia may be considered strategically as the "soft under-belly" of the USSR.

17. Sino-Soviet efforts to redefine certain border areas have been unsuccessful hitherto and even led to limited, but serious military confrontations. Should these tensions persist, the Soviets may encounter further difficulties in enticing skilled manpower in sufficient numbers to what has become a conflict-orientated area. In addition, there may be problems attracting foreign investments to Southern Siberia if these are required to accelerate development in that area.

PART II: SIBERIA'S MAIN ENERGY RESOURCES

18. The general consensus is that the Soviet Union may well be the only country in the world to enjoy all possible energy options, and that ultimately it should be able to substitute one form of energy for another if this need should arise. This advantage enables the USSR to reflect greater flexibility in its overall development planning and its export strategy, and in this respect, Siberia is crucial, containing more than 60% of the USSR's proven energy reserves; indeed, Siberia is energy rich while the rest of the country is relatively energy poor.

A. Petroleum and Natural Gas

(i) Petroleum

19. As no cohesive data are available on oil reserves in the Soviet Union(1), and in particular, in Siberia, the experts tend to differ on quantities. Nevertheless, it is clear that huge deposits do exist, not only in Western Siberia where the Tiumen oilfields are already operating(2), but also in Eastern Siberia where the reserves are untapped, in the Soviet Far East, in off-shore Sakhalin (Soviet Pacific) and in the Northern Arctic off-shore area.

20. In view of the gradual depletion of oil deposits in most non-Siberian areas, i.e. Baku and Volga regions, the healthy evolution of the Soviet oil industry depends primarily on the intensive exploitation of Western Siberia during the present decade, and in the last two decades of this century on development of the more Easterly and Northerly regions.

21. Development of West Siberian production started only about 10 years ago, reaching 31 million tons in 1970 and about 87 million tons in 1973 out of a total production of 421 million tons. The overall target for 1974 is 450 million tons, and until 1980, Soviet anticipation is for an average annual increase of about 35 million tons, bringing production in 1980 to between 600-640 million tons.

(1) For example, according to certain sources, Soviet Oil reserves on 1st January, 1973 were 11.2 billion tons (12.5% of world reserves). By contrast, the Die Wirtschaft (GRD), in July 1973, claims that ultimate crude oil reserves of the USSR could be 300 billion tons (of which 2/3 on-shore) and that 68 billion are in established reservoirs.

(2) The Samotlor field - the largest of them all - is credited with an eventual production potential of 80-100 million tons per year.

C-M(74)14

-7-

22. Soviet experts are so hopeful about Western Siberia (particularly the Samotlor field which has been rated as equal in potential to the Alaskan northern slope) that they have increased their projection for Tiumen output in 1980 to 300-330 million tons, ambitiously far above the 230-260 million tons fixed in 1970. Finally, there are tentative plans for an additional expansion to a minimum of 400 million tons by 1985.

23. Despite what appears like a successful development, Soviet authorities have expressed concern that no equally prolific successors for the West Siberian fields have been located. While much of the relatively lower oil output in the non-Siberian areas would seem inevitable given the depletion of deposits, there have recently been sharp official criticisms of the oil equipment industry's inability to boost output in the less productive fields. Additionally, it should be noted that Soviet consumption over the last five years has been growing faster than production at the estimated rate of 7.5% annually on average.

(ii) Natural gas

24. In terms of hydrocarbon resources, natural gas appears to be the primary fuel category available in the Soviet Union. The bulk of surveyed gas fields are to be found in North Eastern Siberia (Yakutsk) and North Western Siberia (Urengoy), the latter fields constituting 20% of known Soviet gas reserves. Contrary to the crude oil situation, the Soviets have made available certain figures on their reserves. Again, experts tend to diverge on recoverable reserve figures which apparently vary between 15 and 18 trillion m³, i.e. over a third of proved world reserves.

25. Already, natural gas plays an important rôle in the Soviet economy, meeting 24% of all primary energy supply in 1972 against 22% in 1970. Its importance in the Soviet energy balance will grow over the next decade provided the pipeline network can be extended from Siberia through the COMECON area, and eastwards to the Pacific, since Siberia's reserves are removed from the main Soviet population centres in the West and South.

(iii) Coal

26. On the basis of certain estimates, the USSR has just over 60% of the world's potential recoverable hard coal reserves (in 1970 assessed at above 4,000 billion metric tons) and 67% of

brown coal and lignite reserves (1,400 billion metric tons)(1). However, other estimates indicate that for Siberia alone total coal reserves could well reach 4,400 billion metric tons out of a total of nearly 8,000 billion metric tons for the entire USSR. Coal represents a little over a third of Soviet energy requirements.

27. Most of the Siberian reserves which are suited for open-cast mining, are located in Central and Eastern Siberia which at present are not very accessible (e.g. Yakutia and Karaganda), and, therefore, are still largely undeveloped. Currently, the Donets and other European fields produce 60% of total Soviet coal production.

28. In 1973, total coal production reached 668 million tons. It is not however possible to break down this figure between hard and brown coal. Available data in this connection relate to 1971: 488 million tons of hard coal, 153 million tons brown coal and lignite.

(iv) Uranium

29. As in the case of data on oil, uranium reserves are a State secret in the USSR(2). For the time being, nuclear energy plays a very minor rôle in the overall Soviet energy balance (i.e. less than 1%).

30. Current Soviet policy plans the addition of considerable new nuclear power capacity in European Russia in the 9th Five Year Plan. In 1970, it produced 3.5 billion KWH of electric nuclear power, but of the new generating capacity to be added between 1971-1975, 11% is to be in nuclear power plants. By 1975 nuclear power is to account for 25 billion KWH (about 2.3% of output). Rising world prices for oil and gas may favour the development of nuclear power as an energy source, releasing other fuels for export or for the petrochemical industry.

-
- (1) Izvestiya reported on 2nd February, 1974 that according to the Deputy Minister for the Coal Industry, the share of coal in the Soviet energy balance is currently 32% and will fall to 22%. That of oil rose over 20 years from 17% to 44% but is due in the "near future" to fall back to 28%. The share of natural gas and atomic energy will rise considerably. This non-corroborated statement could well imply Soviet determination now to maintain oil exports at least at their current level, or to boost alternative fuel sources rather than expend huge sums on oil and coal extraction in remote areas.
- (2) One estimate stated the 1970 output of uranium oxide to be 8,000 tons in the USSR and 600 tons in the rest of the COMECON, compared with 40,000 tons in the rest of the world (including 3,000 tons in China).

C-M(74)14

-9-

31. The USSR is at least as advanced as the rest of the world in nuclear technology. It is developing a fast breeder reactor and is a pioneer in that field. It also has a lead rôle in fusion technology which is considered to be the technology of the 21st century.

32. Presumably, the USSR disposes of substantial uranium enrichment capacity, a consequence of its military nuclear programmes; over the last few years the Soviets have made arrangements to supply enriched uranium to Belgium, the Federal Republic of Germany, Sweden, Italy and France.

B. The Cost of Energy

33. Siberian oil, gas and coal resources have hitherto been comparatively cheap to locate, exploit and produce. Although exploration activity is expensive in the Siberian environment, unit costs have been low⁽¹⁾, the deposits being extremely large. In addition, as regards oil and gas, most of the drilling has previously been relatively easy given the moderate depth of the bearing structures. Moreover, a large percentage of East Siberian coal fields are suitable for open-cast working.

34. However, these optimistic data do not take account of infrastructure costs on which little information is available. One very pertinent item which greatly compounds the unit cost of oil, gas and coal is transporting it to the utiliser. The distances, as already mentioned, are so great that delivered costs to the European part of the USSR or to the Pacific coast are very high. For example, movement of oil or gas by pipeline from Siberia could cost as much as 5 to 9 roubles per ton. Moreover, by the time Kuzbas coal has travelled to Volgograd (3,700 km), its cost exceeds 12 roubles per ton.

35. In the case of Ekibastuz coal, the cost is so high that only now is it beginning to be brought to the Urals in anything like substantial quantities, although ultimately it is scheduled to provide 25% of all electric power plant fuel requirements.

(1) COST ESTIMATES FOR SOME SIBERIAN ENERGY SOURCES

	West Siberian Oil	West Siberian Gas	Ekibastuz Coal
Exploration cost	1.10 rouble/ton	1 rouble/ 1.000 m ³	-
Investment cost per ton of capacity	3.7 rouble/ton	11.4 rouble/ 1.000 m ³	7 rouble/ton conv. fuel
Production cost	2.50 rouble/ton	1.27 rouble/ 1.000 m ³	1.1 rouble/ton conv. fuel

DECLASSIFIED/DECLASSIFIEE - PUBLIC DISCLOSED/MISE EN LECTURE PUBLIQUE

36. One means of circumventing this coal transportation problem is the concept of long distance power transmission of between 700 and 1,500 KV (compared, e.g. with a current UK maximum voltage of 400 KV). Another scheme to economize on fuel transportation is to build energy intensive industries at the energy source. This could be one more approach to handling the problem of how to attract people to these underdeveloped areas which lack productive infrastructure and amenities.

PART III: THE COMECON ENERGY BALANCE

37. Supplies of natural gas, coal and especially oil play an important rôle in economic and political relations between the USSR and the other countries of Eastern Europe. Soviet sales of oil to that area were 45 million tons and 49 million tons in 1971 and 1972 respectively. It is forecast that by 1980 the East European domestic demand for petroleum may range from between 100 to 150 million metric tons.

38. Such projections largely exceed the present Soviet total net exportable oil surplus (just over 100 million tons), about half of which goes to non-Communist countries, in particular, the industrial West. Oil is, therefore, an appreciable source of hard currency. Clearly, these sales to hard currencies areas will prove even more profitable for the USSR in view of current high world oil prices.

39. As indicated above, the Soviet Union is planning to increase its oil production from 421 million tons in 1973 to 600-640 by 1980; at that time, East European production (mainly Rumania) would be between 20-25 million tons. The capacity of the whole European COMECON area to have an exportable surplus at the end of the decade will hinge on a number of factors, the most salient one being the future growth of domestic demand.

40. There is very little knowledge of Russian consumption by types of oil, but the Soviet Union's domestic demand has been estimated within a range of 500 to 600 million tons. The gap between these figures indicates some degree of uncertainty on how matters may develop during the next few years in the overall Soviet energy sector, and on the priorities accorded by the planners to the consumer sector. For instance, the growth of private automobile ownership and improvement in housing and other material conditions are a considerable drain on oil supplies. On the other hand, the Soviets could suppress some domestic private consumption and save petroleum in some of their manufacturing processes, but these possibilities appear to be limited. Moreover, they rely on the almost excessive use of solid fuels in their electric power plants.

C-M(74)14

-11-

41. Natural gas will be more extensively used as the pipeline network extends, and the pace at which nuclear electricity is procured could be somewhat accelerated by setting up plants in certain less populated parts of Siberia and linking them to the national electricity grid. On balance, therefore, the USSR could in fact either break even between its consumption and production of petroleum, or possibly have an exportable surplus which could be estimated at as much as 140 million tons in 1980: this figure could be even higher if there were a greater substitution of coal and natural gas for petroleum in the economy to free the latter for export.

42. The crux of the problem however lies in the East European countries' supply position. In that area at the beginning of the 1960s, the percentage of oil in the energy balance was less than 10%. It had reached 21% by 1972 and is scheduled to be around 28% in 1980 - a level already well passed by the USSR. The latter has, hitherto, been the almost exclusive supplier of oil to Eastern Europe, with the exception of Rumania which is self-sufficient and imports a small volume of oil from the Gulf for refining and exporting.

43. Eastern European demand for oil by 1980 could reach 100-150 million tons. Its import requirements (75 to 130 million tons) could practically represent as much, or more, than available exportable Soviet oil at that time; the USSR may then have to choose between either maintaining its current exports outside COMECON (allowing Eastern Europe to obtain substantial external oil supplies) or giving priority to its East European partners and sacrificing much needed convertible currency to buy Western technology and equipment.

44. On the basis of these low and high ranges of consumption and production for the USSR and Eastern Europe, the whole area might find its oil balance fluctuating within a surplus of 65 million tons and a deficit of 130 million tons by the end of the present decade. However, this balance could be affected by a number of variables which are difficult to quantify:

- (i) The most important one could be the boost given to world oil production by the increase of petroleum prices. This could act as an incentive for the Soviet planners, if they were prepared to react quickly enough to changes in the energy pattern which have emerged over the past few months. There are, however, a number of obstacles to such a development. The new fields to be developed are

located in Western Siberia far from the consumers and there is a shortage of pipelines to move the oil quickly enough. There is a built-in resistance to change in the Soviet system, and it may be some time before the central authorities modify their short and medium-term plans to avail themselves of the new opportunities. They may also wish to wait and see how, in fact, the longer-term price structure of crude oil and other energy products will develop, before deciding where their main effort should be directed.

- (ii) The Soviet Union may develop a natural gas export drive to Eastern Europe at a faster pace to make up for the decrease in its petroleum export potential. In that case the BRATSTVO pipeline network might have to be extended(1).
- (iii) Soviet coal exports are expected to rise steadily; at present about 66% of these go to Communist countries. The main buyers are East Germany, Bulgaria and Czechoslovakia. It is planned that Soviet exports to these countries will grow from 19 to 25 million metric tons between 1971 and 1980. It is conceivable that the USSR might try to increase its sales to its East European partners beyond these figures in substitution for oil. But in this case as for natural gas, Siberia's resources will have to be tapped more quickly and this, in turn, could pose formidable problems in terms of infrastructure, resources allocations and transport. In 1980 locally produced coal (especially Polish) will remain by far the largest single source of primary energy in Eastern Europe.

45. To sum up, existing plans and forecasts suggest current signs of possible strain towards the end of the decade on the USSR's ability to support COMECON and also maintain its level of exports. The view is that a gradual reduction of the net Soviet oil surplus during the second half of the decade will bring the volume to about 85 million tons. Clearly, in the light of political and financial developments six years hence, it will be for the Soviet leaders to decide how to apportion this surplus, although the suspicion is that they may tend to favour their COMECON partners for the sake of maintaining some cohesion within

-
- (1) Sales of natural gas to Eastern Europe are forecast to grow from 2,344 million cu.m in 1970 to just under 20,000 million cu.m in 1980. Assuming that no production and transport difficulties occur, the USSR might probably be able to increase its deliveries above this figure.

C-M(74)14

-13-

that bloc. In any event, the East European countries will by then have to turn to the international oil market to offset any deficits in their oil imports from the USSR. If present price trends continue this would represent a very heavy strain on their reserves and may act as a brake on their industrial development.

46. After 1980, the oil export potential of the USSR, and the COMECON energy balance, will depend entirely on the pace of development and discovery in Siberia not only of crude oil, but also of those other fuels which could be substituted for it locally, leaving oil as the most flexible fuel export available. Looking so far ahead, one could only venture the prediction that in the 1980s, a successful development of oil and gas in Asiatic USSR (especially Eastern Siberia) could bring about a further transformation in the COMECON energy balance and a return to the export surplus conditions experienced in the 1960s and first half of the 1970s. However, the scale of the volumes required, and the problems involved to achieve this look daunting.

CONCLUSION

1. The rôle of Siberia as a potential long-term energy supplier, especially of oil and natural gas, to the COMECON area and possibly to a number of Western countries cannot be considered in abstracto. The opportunities Siberia might offer and the present relatively modest rôle of the USSR as an oil exporter to the non-Communist world should be considered in a more general context conducive to various options.

A. Investing in Siberia

2. Siberia is one of the large resource frontiers theoretically still open to the world economy. It is, however, only one among many, where energy, in different forms, can be located and developed. Moreover, from the Western standpoint, Siberia's rôle has to be considered as a long-term prospect, as it is unlikely, on the basis of expert opinion already discussed, that its resources - supposing some were available to the West - could play more than a marginal rôle in the world market until well into the 1980s.

3. Another consideration is that, ultimately, it is not the Western need for more energy which will determine Soviet planning decisions on the exploitation rate of Siberian energy resources, in particular oil and natural gas, but internal and external market considerations. Firstly, Soviet domestic and COMECON requirements must be considered - to the extent that these have to be met fully or in part for political reasons. Secondly, attention should be given to the world energy prices and their long-term pattern development, taking into account efforts to find substitutes for part of Middle East oil.

4. Given time, Soviet energy decisions, including exports, will respond to price fluctuations; the higher the price, the more will be presumably supplied, especially to hard currency countries which can furnish sophisticated equipment and technology.

5. Although the Soviets are quite receptive to Western suggestions to negotiate deals for Soviet oil, natural and liquified natural gas, judging from the little information available, the USSR is approaching the whole energy issue, especially that of oil, rather cautiously.

6. On the basis of present production plans, the Soviet Union has the means and the technological know-how to develop its oil and natural gas resources without Western help, although such a policy would probably result in a slower average growth rate of production.

C-M(74)14

-15-

NATURAL GAS

7. The USSR seems desirous to develop for export purposes its natural gas resources from the mid-1970s onward. In view of the extent of reserves, this development would seem to offer better prospects, at present, than the expansion of oil exports.

8. To achieve this objective, the USSR will either have to allocate more of its own gas production resources or, alternatively, bring development aid from potential importers as it is badly short of pipes, compressors and other transport equipment which act as a brake on expanding production.

9. Over the last few years, deals (e.g. 20 years contracts) with a number of West European countries - Austria, the FRG, France, Italy, Sweden and Finland have involved the purchase on credit terms of large-diameter pipes and other equipment; re-payment is to be made by deliveries of natural gas.

10. The United States and Japan appear to be very substantial, potential purchasers of Soviet natural gas, although compared with the enthusiasm US businessmen displayed in this context only a few months ago, in the case of the USA, "Project Independence 1980" could well involve a much reduced interest in Siberian natural gas.

11. Large as they may appear, in 1980 estimated Soviet net gas exports to the rest of the world will represent no more than some 13% of aggregate Soviet gas production (76,630 million m³ as against 550-600,000 million m³).

12. There seem to be two barriers to any substantial expansion of natural gas sales by the USSR - possibly with Western investments. Firstly, the degree to which the industrialized countries are prepared to become dependent on Soviet sales (this will presumably vary from one country to another); secondly the Soviets own attitude to this trade, their competitiveness with other foreign sources and the politico-economic returns they might seek from it.

OIL

13. It is uncertain whether the Soviet Union, from its own viewpoint, will be very keen to extend substantially its oil production for export purposes, especially if the price increase per barrel of oil allows it to make considerable profits, while

keeping exports at their present levels or increasing them slightly. The oil producing countries are moving firmly towards a policy of reserve conservation, and this is a policy which might also be adopted by the Soviet Union, at least until it is satisfied that it actually possesses proven exploitable vast reserves in Eastern and Arctic Siberia.

14. From the viewpoint of the West, the question arises whether it is worthwhile encouraging the Soviet Union quickly to develop its oil resources by making available to it the equipment, technology and other forms of know-how which might allow it to exploit new Siberian oil-bearing areas and to develop production in West Siberia. The problem there is four-fold:

- The West require very substantial funds to develop throughout the non-Communist world complementary and alternative energy sources to those in the Middle East; it may prove difficult to allocate, in addition resources to Siberia where there is still a considerable area of uncertainty about the real volume of proven and recoverable crude oil resources which, in any case, are located in difficult terrain, posing daunting infrastructure and transport problems.
- The West as an investor in Siberian resources would probably have little say in the way Siberian oil will be developed or priced. It may even find that it is running certain risks in pinning down considerable resources in a country with an alien politico-ideological system.
- It is dubious, in the light of the present Soviet export performance to the West, forecast production and consumption data for 1980, whether Siberian oil could be exported in very significant quantities to the West before the middle of the next decade; however, by then Japan may be getting 25 million tons of Tiumen oil annually. Such a lead time could prove too long and the West might leave it to the Soviets to develop their Siberian resources essentially on their own, while they allocate their investments to other areas which could be developed faster and perhaps cheaper.
- The Sino-Soviet dispute on certain Siberian border areas could inhibit Western enterprises from entering into arrangements which could be challenged later.

C-M(74)14

-17-

15. On the other hand, there are arguments in favour of participating in the development of Siberian oil, although in the medium-term it is unlikely that much of this would find its way to the West. A faster growth rate of oil production and exploration in Siberia, in particular its Western regions, could enable the COMECON area to remain basically self-sufficient, and even to have some surplus oil for export. Such a development could have a stabilising effect on world oil markets by eliminating strains which could otherwise emerge, if the COMECON area as a whole entered the market as a large scale oil importer by the end of the decade.

16. Nevertheless, even if this situation does not materialise, the East European countries, including the USSR, may well continue to buy small quantities of Middle East oil as a component of their overall energy strategy and in the context of on-going relations with certain Gulf countries.

17. Whilst, therefore, it may be a long-term paying proposition to have some stake in Siberia's potentially vast energy resources, account will also have to be taken of developments and costs in other types of energy and energy-rich areas of the world, as well as of ultimate oil price levels, before sinking risk capital into what might turn out to be an expensive energy asset.

18. Still, if the terms are right, the West might find some advantage in entering into co-operation with the Soviets to develop Siberia's existing and potential oil resources. Whereas it is reasonably certain that with a relatively short lead time the Soviet Union could become a major natural gas exporter, it remains an open question whether the USSR will become a very substantial net petroleum exporter to the non-Communist countries in the foreseeable future. An additional consideration, which has already been made for natural gas, is the degree of dependence on Soviet oil acceptable to the West; here the problem is one of "diversifying the insecurity of supplies" among as many sellers as possible.

B. Investing in High Cost Energy Bearing Areas

19. The new politico-economic, technical and institutional forces at work in the energy field, may render attractive certain regions (some with extreme conditions of climate and/or terrain) whose raw materials (particularlay oil and gas) become commercially valuable despite the high prospection, production and transportation costs. This phenomenon generally depends on one or both factors: growing imbalance - real or artificial - between demand and supply, and rising prices resulting from inflation or "monopoly" situations enjoyed by the producing states.

20. Recent developments in the world oil markets have renewed interest in the resource frontiers regions of the world. One of them, Siberia, has already been examined. Many others exist; they are perhaps potentially less rich, but their contribution to the long-term solution of real or provoked energy shortages could be invaluable.

21. For example, for the United States, the North American Arctic has become a resource frontier of the utmost importance for the rest of this decade. Canada also has an obvious interest in its own Arctic areas, in the huge tar sand deposits of Alberta and Athabasca and in the not yet fully tapped hydropower of its vast territory.

22. Vast quantities of oil and natural gas are also believed to lie under the seas and oceans. The North American off-shore continental shelf and the continental slope will, no doubt, be seriously explored in the foreseeable future. Western Europe has steadfastly extended its energy frontier in the North Sea since the early sixties, discovering substantial quantities of natural gas and crude oil in the process.

23. Lastly, geological conditions appear favourable in Australia and in certain parts of the Asian mainland, China and in the East and South East Asian continental shelves (e.g. the Attaka field in Indonesia).

24. Two problems have to be borne in mind when considering these high cost new frontier resource areas as alternatives or complements to available crude oil supplies, of which there is currently no fundamental physical shortage (e.g. Middle East production rose by 23% in the first nine months of 1973 compared with 1972).

25. The first problem is the time needed to bring these new areas into commercial production. This is a physical constraint. Lead times may be shortened, but only within relatively narrow limits. It has taken over a decade to establish the North Sea and Alaska as substantial oil bearing and producing areas, and it will be several years more before sizeable oil volumes start flowing into American and European refineries. The time-span required to develop new areas is difficult to assess, but clearly the search for new hydrocarbon sources cannot be of much short-term relief to the currently hard pressed consumer countries.

C-M(74)14

-19-

26. The second problem is that of investments and costs. The extent of oil price rises during the last quarter of 1973 must presumably have made previously marginal discoveries commercial. The price hikes have also encouraged further exploration of high cost oil or other costly alternative energy sources. The opinion is that actual and potential oil discoveries tend to weaken the OPEC position and make it more likely that some type of competition will again develop in the world energy market.

27. Most OPEC oil, with the exception of Venezuela, is low-cost energy at between 10 to 30 US cents a barrel to produce. In recent months, the selling price of this low-cost oil has been pushed towards and even beyond the level of much higher energy sources. This had made it more feasible to increase interest and capital investment in such high-cost energy, including oil from alternative sources: this tendency has been strengthened by the political inconvenience of depending for vital supplies on foreign, possibly non-co-operative, countries.

28. However, the quest for greater autarchy and alternative energy sources including oil and gas, will involve the substitution of low-cost energy (which leaves a profit and economic rent for recycling into the world economy) by a high-cost energy, necessitating much larger investments. Thus, one participant stated that the cost of finding and developing new oil resources in the non-Communist world could reach the staggering figure of \$1,400 billion for the period 1971-1985, as against previous estimates of about \$500 billion for the whole of the 1970s.

29. While recognising the consumer countries' need to develop alternative and/or additional energy sources to OPEC oil, certain participants stressed that achieving this objective would take time and be extremely expensive in investments. The latter would reduce already scarce resources (e.g. steel, concrete, engineering skill) required to develop other sectors of the world economy and which would be no longer available for these.

30. The participants also felt that a massive substitution of low cost, but high priced energy by high cost, high priced energy would have to consider the foregoing facts. In this context, attention was drawn to a danger line(1), difficult to determine, beyond which consumer countries could go too far if they were too hasty in their attempts to seek new but even more investment-intensive energy sources. They could, consequently, help to produce a general impoverishment of their economies which would automatically affect living standards.

(1) North Sea oil investments and costs are certainly below that danger line

31. The present energy crisis, experienced by practically all the non-Communist developed countries and many developing ones too, has acted as a catalyst: it has precipitated events which, while not altogether unforeseen, were expected to develop over a much longer time span. This would have enabled governments and industry, both in the energy-exporting and the consuming countries, to adjust gradually to the necessary shifts in pattern and geographic energy sources which would have occurred during the 1980s and 1990s.

32. The consequences of the impacted events (oil price rises, inadequacy of most other energy sources in the short-term, demand for oil outstripping supply) over a three months period in 1973, has not yet been fully grasped by a large section of the public despite the temporary fuel shortages in certain sectors of the economy.

33. Experts expressed the belief that the general public should be made aware of the consequences of the new energy situation, and its implications, both for the economy and for their own living standards. The economic rent enjoyed by the OPEC countries has now reached such a magnitude that its recycling in the world economy poses, at least in the near future, almost insurmountable difficulties. The public should also be informed that the new oil prices are exacerbating inflationary pressures and will cause such a drain on the consumer countries' trade balance, foreign currencies, reserves and national resources that sacrifices will have to be accepted by all sections of the community.

34. Decelerating economic growth could be one method in most Western countries and Japan for slowing-down the inflationary spiral and to conserve energy. However, the cure might prove worse than the disease: a sharp recession could feasibly culminate in a serious economic depression - a situation which would be socio-politically unacceptable.

35. On the other hand, there must be a public awareness that a period of relative austerity is inevitable together with a consequent downturn in the economic growth rate. On-going policies aimed at an exponential growth of the economy do not seem possible during the transitional period into which the industrialized West has entered. The growth curve may have to be flattened in order to allocate scarce resources to those economic objectives on which the general welfare depends in the long run. In this connection a number of measures have been proposed:

C-M(74)14

-21-

- energy saving: this is a non-repeatable process and time-consuming as wasteful individual habits and industrial processes are modified;
- reallocation of investments within the national economy, in particular, by increasing funds earmarked for two sectors:
 - (i) the energy sector, to accelerate diversification of sources and types of fuels;
 - (ii) the highly productive, capital-intensive industries which produce commodities including a high value-added component and particularly suitable for exports;
- reduction of certain non-essential imports and increased taxation for certain energy-intensive consumer goods (i.e. durable and non-durable).

36. These various measures could probably affect labour-intensive industries, increasing frictional and structural unemployment until the adjustment period of the economy - whose duration cannot be predicted - is over.

37. All the foregoing measures call for much more social consent and cohesion. It may be useful to examine whether the existing social structures and communication lines between these structures can achieve this consensus.

38. In the past 25 years Western living standards have improved because there existed, on the one hand, what seemed like inexhaustible energy sources at a very low cost and, on the other hand, the terms of trade were generally more favourable to the producers of industrialised goods than to those of basic products. This period is now over. Many participants believe that the West must endeavour to extricate itself as painlessly as possible in terms of economic and social costs.

39. It was further stressed that to shirk the necessary sacrifices caused by the energy crisis via a policy of escapism, allowing the build-up of huge and unmanageable balance of payments deficit and run-away inflation would, in a relatively short time, simply compound existing problems and increase current monetary instability both at national and international levels. Ultimately it could entail even harsher methods to stop the crisis heightened by industrial unemployment, create socio-economic disruption as well as delay an adjustment of the economy to the new conditions under which it will have to operate.

40. The need for continuous consultation between the OPEC countries and the consumer nations was emphasised as basic in order to find a compromise to reverse the present trend towards increasing oil prices, stabilize the market and create more solidarity between exporters and importers.

41. In the long run, neither the oil producing/exporting countries, nor the Western nations, have anything to gain from the persistence of the present conditions. These could, in extremis, lead to a mutually critical situation not merely for the economies of the industrialized West and the developing countries, but also for the economic structures of the oil producing countries themselves.