Chapter VI

ECONOMIC AND CULTURAL RELATIONS

(A) Economic Relations

Indo-Soviet relations are characterised by mutual respect and trust between the leaders and people of the two countries and by diverse spheres and forms of bilateral cooperation. These words, taken from the joint Soviet-Indian Declaration signed in 1982, reflect in brief the essence of relations between the two countries.

Independent India's advance to economic progress in inseparably linked with Soviet-India cooperation. The relations between the two countries are a good example of peaceful coexistence between states with different social systems. They are based on the principles of mutual benefit, complete equality, trust and non-interference in each other's affairs. These very principles underly the Treaty of Peace, Friendship and Cooperation between the Soviet Union and India, signed in 1971.

Indo-Soviet relations currently embrace practically all major spheres of the two countries' economies: the heavy industry and geological prospecting, irrigation and the coal industry, machine building, space research and state planning. Tens of major enterprises of ferrous and non-ferrous metallurgy, machine building, oil, coal, medicine and other branches of industries as well as power and agriculture have been built in India with Soviet assistance during the short period. They first of all, are steel plants at Ranchi and Durgapur, aluminium plant at Korba, oil refineries at Barauni,
Koyali and Mathura, a number of coal enterprises, petroleum industry, power stations, instrumentation plant at Kota, pharmaceutical plants at Rishikesh, Hyderabad and Madras agricultural farms, higher middle education establishments and other important projects.¹

An important role in the development of mutually beneficial cooperation between the two countries belongs to trade. Statistics indicate that the provisions of the joint Soviet-Indian declaration signed in November 1973, dealing with the increase of mutual trade 1.5 to 2 times by 1980, was successfully brought into effect. Indeed, the volume of trade in 1980 exceeded 1.7 billion roubles, having increased 2.5 times since 1975.²

The Soviet Union has long ceased to be a buyer of traditional Indian export commodities. Along with stepping up the import of traditional items, the U.S.S.R. is increasingly importing Indian industrial or the so called engineering products.

Starting from the 70s, the Soviet Union, meeting the requests of the Indian side, appreciably increased the exports to India of many commodities and industrial articles: oil products, fertilisers, asbestos, metals, newsprint and so on. From 1977 the U.S.S.R. started exporting crude oil to India to meet the increased demand of the country's industry for this commodity. Machines and equipment hold important place in the structure of Soviet exports to India, too.

Trade is an important and most dynamically developing

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¹ V.I. Litvinenkó, Economic Counsellor of the U.S.S.R. Embassy in India, The Times of India, New Delhi, 13 April 1987

² Y. Pitovranov, President of the Presidium of the USSR Chamber of Commerce and Industry, The Times of India, New Delhi, 18 Nov 1984
sector of the bilateral Soviet-Indian trade relations. It has been developing on a long-term and balanced rupee payment basis. Such a system of trade has been in existence between the two countries for over 30 years. It has been tested by time and has proved its vitality and utility.

Before 1955, when the first economic agreement was signed, India imported little from the Soviet Union. The trade was almost stagnant. After the 1955 agreement, with growing Soviet exports to India of plants and machinery, Indian exports to the Soviet Union continued to rise till the early 70s. With the growing development of its economy, India's demand for plants and machines began to decline, and its need for raw materials began to rise.

After two decades India's exports to the U.S.S.R. increased to Rs.2,858 million and imports to Rs.2,547 million in 1973-74. In the next year there was a steep rise in both exports to and imports from the U.S.S.R. and it became India's most important trade partner. 3

The overall Soviet foreign trade grew from 6.4 billion dollars in 1955 to about 20 billion dollars in 1958. In commodity composition of the foreign trade, consumption goods increased from 25 per cent of the total imports in 1955 to 34 per cent in 1968. 4

During the 1960s agricultural products began to yield place to manufacture, especially to engineering industry in the composition of India's exports to the Soviet Union. The

3 R.H. Patel, "Emerging Possibilities in India's Bilateral Trade", Economic and Political Weekly, 5 march, 1977

4 M. Sebastian Stanislaus, Soviet Economic Aid to India, New Delhi, 1975, p.159
manufacured exports were made up to clothing, chemicals, footwear, dyeing and tanning materials, pharmaceutical products, iron and steel and engineering goods. In the second half of the the sixties the exports of engineering goods to the Soviet Union showed an increasing trend. The value of the engineering exports stood at Rs. 97 lakhs in 1968-89. However, these exports amounted to only one per cent of the total Indian engineering exports in 1968-69. Export of other commodities like clothing and iron and steel also showed an upward trend in the late sixties.

It is also necessary to mention here that by the end of 1960s the Soviet Union constituted a significant market for many Indian exports. For instance, the Soviet Union accounted for 64% of India's total export of fruit juices, 60% of batteries, 59% of woolen hosiery, 55% of men's shirts and 52% of leather footwear.

Therefore, from the early seventies, the U.S.S.R. stepped up the supply of raw materials to India which rose to about 85%. It was realised then that further growth of Indo-Soviet trade would depend on India buying more machines, equipment and technology from the Soviet Union.

Geared to India's planned development, Indo-Soviet trade has played a major role in the industrialisation of India. About 70 major projects in the core sector of the Indian economy — steel, heavy machines, oil, power, coal and others — have been built in India through Soviet assistance. This has not only placed India among the industrial countries of the world but also advanced its economic independence and self reliance today. India holds the leading place among the developing countries with whom the Soviet Union maintains trade relations.5

5 The Times of India, New Delhi, 18 Nov 1984
For more than 30 years now trade between the two countries has been built on the basis of long-term agreement signed for five year periods. Today, it is based on a trade agreement for 1986-1990. Every year the two countries sign protocols on trade turnover specifying the list and volume of mutual goods deliveries with due regard for each side's requirements and capabilities. The planned character of trade enables the U.S.S.R. and India to make appropriate provisions in their respective long-term and current plans of economic development for the planned mutual goods deliveries under long-term agreements and yearly protocols.

In the subsequent period, having made substantial progress in the development of national machine building, India started gradually reducing the import of many types of machines and equipment. In the period between 1981 and 1985 the share of machines and equipment in the general volume of Soviet exports to India averaged 15 per cent. Today, the U.S.S.R. exports aircraft, trucks, mining, geological prospecting, oil drilling, metallurgical, power and other equipment to India.

India's exports to the U.S.S.R. include a wide range of goods which are not produced in U.S.S.R. for climatic reasons such as coffee, castor oil, black pepper, jute, etc., or whose home production does not meet the existing demand (hides and skins, tea, mica, cotton fabrics, shoe uppers, etc.).

The share of the U.S.S.R. in the general volume of Indian exports is growing all the time and stood at about 15 per cent in 1984, while in the export of individual commodities it is actually much higher, viz., coffee-37%, tea-28%, black pepper and other species-25%, tobacco-40% and jute articles-65%.

6 A.P. Filatov, "Fruitful Soviet-Indian Trade Cooperation", The Times of India Supplement, New Delhi, 14 Nov 1986
7 Ibid.
The growth in the volume of import from India is accompanied by changes in its commodity structure. In particular, the share of agricultural products (tea, coffee, spices, groundnuts) is declining, although in absolute figures their imports to the U.S.S.R. continues to grow, while the share of finished articles (engineering products, clothes, cotton fabrics, shoes upper, etc.) is going up the shares of finished articles in the general Soviet import of Indian goods surpassed 60 per cent in 1985, with engineering products accounting for 12 per cent of that total. 8

A new trade agreement, an agreement on mutual supplies of goods during 1986-1990 as well as a protocol on the supplies of machinery and equipment in India during 1986-1990 (under a commercial credit for 10 years at four per cent interest) were signed in furtherance of the agreements and accords concluded between the two countries. These documents will serve as the basis for the broadening of Soviet-Indian trade during the entire current five-year plan period. They define the main principles and the consignment of goods of mutual deliveries. 9

The creation of an Indo-Soviet Joint Commission in 1972 was also a significant step in the promotion of trade and economic cooperation. An equally important step was the agreement between the Federation of Indian Chambers of Commerce and Industry and the Soviet Chamber of Commerce and Industry in 1979. The contacts between the two chambers have grown from 1979 so that today not only regular exchanges of business delegations take place but also seminars and meetings are conducted in order to explore further possibilities for trade exchange. 10 The agreement notably provides for the exchange of

8 Ibid.
9 I.Semenov, Trade Representative of the USSR in India, The Times of India, New Delhi, 9 Aug 1986
10 The Times of India, New Delhi, 18 Nov 1984
information on issues of mutual interest, for the organisation of various symposiums and seminars, for assistance in staging exhibitions in both countries, for the exchange of delegations of representatives of business circles and so on.

Under that agreement, the U.S.S.R. Chamber of Commerce has worked out business programmes and organised visits to Soviet foreign trade organisations, ministries and agencies for more than 20 delegations from India. In April 1982, in accordance with the agreement there was a seminar on "How to Trade with the USSR" in India, which was attended by a delegation of the Soviet Chamber of Commerce and Industry and by about 250 representatives of Indian firms and organisations.

In the period between 1977 and 1982 over 70 Indian firms have taken part in various international and specialised exhibitions organised in the U.S.S.R. with the assistance of the U.S.S.R. Chamber of Commerce and Industry. The 1978 National Exhibition of India in Moscow was a big success. About 400 Indian firms and organisations took part in the exhibition which was attended by 1.5 million visitors. Even bigger exhibition was staged in the Soviet Union in 1984.

The export of goods to the U.S.S.R. is of special importance for India since in conditions of perpetual instability of the world capitalist economy and because of the various restrictions and barriers raised by the Western nations in the way of exports from developing countries, Indian goods are running into mounting competition on the world market and therefore their share in world trade is declining.

India's share has decreased in the global export of tea

11 Y. Pitovranov, President of the Presidium of the USSR Chamber of Commerce and Industry, *The Times of India*, 18 Nov 1984
12 Ibid.
from 27 to 16 per cent, of cotton fabrics from 5 to 1.7 and of coffee from 2 to 0.9 per cent. In these conditions the Soviet Union remains a large and secure market for Indian goods. Moreover, stable purchases by the Soviet Union of certain Indian goods have led to the establishment and intensive development of corresponding industries in India such as the production of knitwear clothing and shoe uppers.\textsuperscript{13}

The results of Soviet-Indian trade cooperation and the permanent drive of these two countries for its further expansion and advancement show how much can be accomplished by states with different socio-economic systems if their relations are built on the principles of equality, mutual benefit and respect for each other's interest. Good prospects for the further consolidation of trade contract were opened after the signing of a trade agreement between the U.S.S.R. and India for 1981-85, providing for a further growth of mutual trade by about 100 per cent. In 1982, trade turnover between the two countries totalled as much as 2.5 billion Roubles.\textsuperscript{14}

At the end of sixth five-year trade agreement (1981-85), Soviet-Indian trade touched the 178 billion Rupee mark, which was 2.5 times more than the trade turnover during 1976-1980. In 1985 trade turnover between India and Soviet Union exceeded Rs.44 billion for the first time.\textsuperscript{15}

The most favourable possibilities for production cooperation between Soviet Foreign Trade organisations and Indian public organisations and private firms exist in such fields as power, electronics, computers, machine tools, transport,

\begin{itemize}
  \item \textsuperscript{13} A.P. Filatov, \textit{op.cit.}
  \item \textsuperscript{14} Y. Pitovranov, President of the Presidium of the USSR Chamber of Commerce and Industry, \textit{The Times of India}, 14 Nov 1984
  \item \textsuperscript{15} I. Semenov, \textit{op.cit.}
\end{itemize}
production of transport means (trucks, cars, electric locomotives), power and mining equipment. The visit of a delegation of the Indian Association of Engineering Industry to the U.S.S.R. (in May 1985) and of a delegation of the U.S.S.R. State Planning Committee to India (in October 1985) laid the foundations for this work. These visits revealed to both sides a number of interesting fields of possible cooperation. The results of these visits were concretised later at the session of the working group of production cooperation and machine building, held in January 1986.

The Fourth Session of the working group on electronics, which concluded in Delhi, was a concrete and important step in this direction. A working programme of cooperation in the field of electronics for 1986-1990 elaborated a long-term programme of cooperation in computer technology and electronics till the year 2000. Such programmes are being worked out for other branches as well, as envisaged by the Agreement of Basic Directions of Economic, Trade and Scientific Technical Cooperation till 2000, signed on May 22, 1985.

Considerable work is being done in the field of Soviet-Indian trade. After registering constant growth in the commodity turnover during all these years, in 1986, following the steep decline in the prices of oil and petroleum products in the world market, the commodity turnover also declined. However, as a result of the efforts made by the two sides, in 1987, it became possible to stabilise lateral trade and ensure its growth. For this, new commodities such as plastics, ammonia, cellulose, raw materials, non-ferrous metals and methanol, etc., were added to the Soviet-Indian trade as new additional possibilities were explored for increasing the supplies to India of a number of important goods.16

16 Gennadi Scherbakov, Trade Representative of the USSR in India, The Times of India, New Delhi, 18 Nov 1988
The two countries are also considering possibilities of utilisation of such forms of cooperation with India's public sector and private firms as participation in the construction of joint projects in the U.S.S.R. by Indian firms, conclusion of long-term contracts between Soviet organisations and Indian private and public sector firms which export Soviet goods and import Indian goods, organisations of counter deliveries and barter deals, widening of the exchange of visits of delegations of industrial and trade circles of the two countries, development of cooperation between Soviet and Indian Chambers of Commerce and Industry, associations and amalgamations, organisation of exhibitions, seminars and symposiums, participation of Soviet organisations and Indian firms in fairs and exhibitions to be held in the U.S.S.R. and India.

Of late, substantial progress has been made in this direction as a result of the holding of a number of exhibitions and seminars and mutual visits of delegations. A major specialised exhibition of Soviet machinery, equipment and technology in Bombay and exhibition of fifteen Soviet foreign trade organisations held earlier in Calcutta, Bangalore and Pune, were a great success. The seminar on "Indo-Soviet Trade and Economic Relations" held in Delhi on January 2-3, 1986, at the India International Centre with the active participation of a number of Union Ministries of India, leading State Corporations, associations and federations of private sector firms was extremely interesting and useful. Undoubtedly, such seminars should be held more frequently.
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Source: India Today, Oct 15, 1982
INDIA'S TRADE WITH U.S.S.R.

(Rs. in crores)

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Source: The Times of India, New Delhi, 25 Nov 1986

Major Projects

Indo-Soviet Cooperation in Steel Making - The signing of the historic agreement on 2 February 1955, on the construction of Bhilai Steel Plant, marked the beginning of this fruitful and highly beneficial cooperation.

The share of Soviet-assisted iron and steel plants is nearly one-third high in the aggregate national steel output. In Bhilai the steel plate rolling mill 3600 assembled of equipment manufactured by the Soviet Novakramatorsk and Indian Ranchi Heavy Machine-Building plants has been steadily advancing to its design capacity. The Bhilai plant started up three continuous steel casting machines which are to supply the rolling mill 3600 with slabs and a blooming installation. Equipment for these plants was manufactured by the Soviet South-Ural and Indian Ranchi Machine Building plants.17

The Bhilai Steel Plant managed by the Steel Authority of

17 V. Kolpakov, Minister of Iron and Steel Industry, USSR, The Statesman, New Delhi, 10 Aug 1986
India Limited contributes more than 30 per cent of the total production of steel in the country. Since the beginning of operation in 1959 and by the end of 1975-76, the plant with the capacity utilisation of about 94 per cent has registered cumulative production of 25 million tonnes of ingot steel and that of 20 million tonnes in 1962-63 and was subsequently expanded to 2.5 million tonnes in 1967. The plant is under process of expansion.  

In 1974-75 the profit-wise performance of Bhilai was extremely impressive. Out of the total profit of Rs.400 million made by the Hindustan Steel Limited, Bhilai contributed Rs.360 million. A substantial amount of Bhilai's production is exported to more than 40 countries thereby earning a considerable amount of foreign exchange. Till March 1976, it had exported 4.4 million tonnes of steel worth Rs.248 crores.  

India is in fact the largest recipient of Soviet aid among the developing countries. Starting with the construction of the Bhilai plant, the Soviet Union has assisted India setting up about 70 more enterprises. By 30 April 1977 the total Soviet credit facilities to India has reached Rs.1,920 crores. The Soviet Union has so far provided long-term credits of Rs.1,237 crores.  

These long-term credits have helped India to emerge as one of the industrial states on the world map. Today Soviet aided projects in India account for 85% of heavy engineering goods, 60% of turbo-generators and heavy electrical equipments, 31% of steel, 20% of electric power, 70% of oil  

19 *The Patriot*, New Delhi, 26 May 1975  
products and 16% of iron ore. 21

At the moment, the work to expand the plant's capacity to 4 million tonnes of steel a year is nearing completion. Already built is a converter shop with a capacity of 1.5 million tonnes of steel a year with continuous pouring stabbing and blooming mills, and a high capacity thick steel rolling mill 3600; these production facilities were designed by the Indian company MECON with the participation of a number of Soviet agencies at the initial stage of designing. A seventh blast furnace with a volume of 2,000 cum. and a ninth cokeoven battery are under construction at Bhilai now under MECON's designs. 22

Another big step in Soviet-India metallurgical cooperation was the construction of the Steel Mill of Bokaro. The first stage of the plant with a capacity of 1.7 million tonnes of steel per annum was completed in early 1978. At the moment workers and engineers are completing the expansion of the plant to a capacity of 4 million tonnes a year. 23

Meanwhile, Bokaro has emerged as the biggest supplier of pig iron to the foundries of the country thereby meeting 45% of the demand. In June 1977, it completed despatch of one million tonnes of pig iron valued at over Rs.380 million of which 660,000 tonnes were sold at the home market and 334,000 tonnes were exported to the Soviet Union and Japan, earning Rs.110 million in foreign exchange. 24

In 1979 the U.S.S.R. and India signed an agreement on cooperation with the construction of a new Steel Mill at

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21 Subrata Banerjee, "Indo-Soviet Economic Cooperation and Struggle Against Neo-Colonialism", Amity, 9(2-3).
22 I.Kazanets, Minister of Ferrous Metallurgy of the USSR, The Times of India, New Delhi 14 Nov 1984
23 Ibid.
24 R.K.Sharma, op.cit.
Visakhapatnam with a capacity of 3.2 million tonnes of steel a year with the first stage production facilities having a capacity of 1.1 million tonnes of steel per annum. The plant is designed with due regard for the latest advances in ferrous metallurgy. It will have blast furnaces with a unit volume of 3,200 cub.m and coke batteries with an oven volume of 41.6 cub.m, a converter shop where all steel will be cast by 6 steam continuous pouring machines and a rolling shop with advanced high productive rolling mills.25

These days Soviet design agencies are completing a cost and feasibility study for modernising and expanding India's oldest TISCO Steel Mill at Burnpur. The accomplishment of the measures provided for by the study with help raise the plant's output, upgrade its efficiency, introduce new technologies and equipment and thereby expand the range of finished products, upgrade their quality and improve working conditions at the plant.

To provide India with qualified national metallurgical design personnel, the U.S.S.R. renders it technical assistance in strengthening the country's research and design institutions.

Oil - Soviet and Indian oil producers have been cooperating for more than three decades now. The seismic sea survey undertaken with the aid of Soviet seismic ship lasted from 1964 to 1966. Nearly 124,000 square kms of shelf area is extremely promising according to the provisional estimates.26

The Soviet Union has made the most valuable contribution in the field of necessary skills for Indian oil industry. Nearly 1,500 oil experts have visited India to assist the ONGC and

25 I. Kazanets, op.cit.
26 See for details, V.B.Singh, Indo-Soviet Relations 1947-77, New Delhi, 1978, p.38
more than 400 oil engineers and workers have received training in the U.S.S.R. and 500 other Indian oil specialists have been trained directly at the work sites.27

The Soviet Union has not only helped in the field of prospecting, drilling and production of crude oil but also in the public sector at Barauni, Koyali and Mathura. The Barauni refinery started production in 1964 for which the agreement was signed in September 1959. The capacity of this refinery was expanded from two million tonnes to three million tonnes in November 1967. The two million tonnes annual capacity at Koyali was also built with Soviet assistance. It was commissioned in 1965 and its capacity was expanded to three million tonnes in September 1967.

Soviet oil producers are glad that India is an oil producing nation, with annual production estimated at 30 million tonnes. It has launched offshore production on the Bombay shelf, in addition to onshore facilities in the States of Gujarat and Assam where Indian specialists for the first time discovered oil deposits and began to develop oil fields with the help of their Soviet colleagues.28

Cooperation between Soviet and Indian producers has now entered a new stage. Earlier, seismological prospecting conducted with the help of Soviet specialists in some areas of different oil and gas bearing basins was not tied up in a single programme. In line with inter-governmental agreements of 22 May 1985 and 27 November 1986, Soviet organisations at the present time fulfil all geological and prospecting operations on a contract basis in a comprehensive programme within the boundaries of agreed-upon onshore


28 V. Dinkov, Minister for the Soviet Oil Industry, The Hindustan Times, New Delhi, 23 Nov 1987
districts of India. These include geophysical research, data process and interpretation, the drilling of exploration wells, evaluation of recoverable oil reserves, project design and development of a feasibility report on a contract for geological prospecting in West Bengal, now under the consilopment of new fields. These works are to be carried out and paid for by Soviet organisations in Cauvery, North Cambay and West Bengal basins.

Coal - Soviet assistance in coal industry has been equally vital. There were four projects in 1974 (increased to 12 in 1987), in the coal industry built with Soviet assistance — the Banki project with an annual capacity of 0.6 million tonnes. Surakhachar project with 1.1 million tonnes, coal quarry in Manikpur with 1.0 million tonnes of coal and coal washery at Kathara with a capacity to process 3 million tonnes of raw coal per year. In 1975-76 these enterprises made a profit of about Rs.100 lakhs. Apart from so many other valuable technical assistance in the development of Indian coal industry, the Soviet Union has assisted India also in the Mining and Allied Machinery Plant at Durgapur with a capacity of over 45,000 tonnes of mining equipment annually. In 1975-76 it earned a net profit of Rs.70 lakhs.

Over the 30 years of Soviet-Indian cooperation in coal-mining, quite a number of coal mining and processing facilities have been started up in India, including the above mentioned Surakchar and Banki manies, and the Ramgarh, Manikpur and Jayant open cast mines and Kathara beneficication plant. This led to a considerable increase in the national coal output in

29 Ibid.
India, which has grown to something like 170 million tonnes of coal a year. Indian authorities are planning to raise coal production to 400 million tonnes by the year 2000. Soviet assisted projects will account for a quarter of the annual national output of coal.  

In keeping with these accords, the Ministry of Coal Industry of the U.S.S.R. and the Ministry of Steel and Mines of the Government of India developed and signed a programme for cooperation in coal production for up to the year 2000.

Soviet design institution have already developed projects for the Mukunda open cast mine with a capacity of 12 million tonnes of coal a year, Nigahi open-cast mine with a capacity of 14 million tonnes of coal a year and the Jhanjra mine (2.8 million tonnes) among others. Three more designs are underway for the Moher, Kumari and Khaida open-cast mines with an aggregate capacity of 30 million tonnes of coal a year. Another five designs for the Sitanala, Kapuriya, Mahal, Karhauri and Parbatpur mines with an aggregate capacity of nine million tonnes of coal a year will be completed in the very near future.

Soviet organisations elaborated a master plan for the development of the Godavari coal deposit in the southern part of India, which provides for the construction of 12 conventional and five open-cast pits with an aggregate capacity of 24 million tonnes of coal a year. A possibility is being considered for building fuel-energy complexes at the Mukunda open-cast mine in Bihar and the Neiveli-III open cast mine in Tamil Nadu.

32 M. Schadov, Minister of Coal Industry, The Hindustan Times, New Delhi, 23 Nov 1987
33 Ibid.
34 Ibid.
The Soviet Union gives expert and technical assistance in driving three shafts at the Jhanjra mine and developing steep coal beds at the Tipong mine. The Soviet Union began shipping of equipment for the Khadiya, Mukunda and Jhanjra mines.  

**Power Industry** — Since 1957 the leading design and head building, assembly and adjustment organisations of the Ministry of Electric Power Development and Electrification of the U.S.S.R. have, together with Indian specialists, been actively involved in the designing and building of 16 power plants, including factory-attached, having a total capacity of 345 million kilowatts. It is to be said here that the initial period of cooperation laid a good and healthy foundation for mutual understanding and confidence between the two countries.  

In 1968-69 the Harduaganj, Korba, Obra and other fuel-burning and hydraulic power plants were completed and put to use. One of India's largest electricity generating facilities at Neyveli stands apart among thermal power stations.  

The Heavy Electrical Equipment Plant at Hardwar, also set up with Soviet assistance, was an important landmark in the development of our power industry. Presently it is meeting more than 56% of the demand for large power generators and a substantial part of the demand for large size industrial motors. This is a technologically advanced plant which produced turbines with a capacity of 200,000 kilowatts. Not a single developing country except India is manufacturing such machines.  

Agreement on economic and technical cooperation between

35 Ibid.
36 Anatoli Mayorets, Minister of Power Industry and Electrification of USSR, *The Statesman*, New Delhi, 10 Aug 1986
37 *Soviet Review*, 13(39), 26 Aug 1976, p.36
the Soviet Union and India, signed on December 10, 1980, marked a new phase in the development of bilateral cooperation. Under it, the Soviet and Indian organisations signed in 1982 contracts on giving India assistance in building the first stage of the Vindhyachal Thermal Power Plant, consisting of six power units of 210 megawatts each. 38

Equipment and materials supplies for the Vindhyachal project began in late 1984. As of now 4 boiler units, 2 turbines, 2 generators and part of the generators and part of the general and auxiliary equipment have been shipped; most of the equipment has been supplied for the first power unit, due for commissioning in June 1987. Together with their Indian colleagues a group of Soviet specialists are conducting building inspecting and contract supervision of equipment. 39

Simultaneously the Soviet Union and India are building the 570 km Vindhyachal–Jabalpur–Itarsi power-transfer line of 400 kilowatts. The detail contractor design of the line has been handed over to the customer. Metalwork pylons, wires, insulators and equipment for the line are being supplied. At the Soviet-Indian summit in 1982 the agreement in principle was reached on giving India assistance in the building of industrial projects, including a thermal power plant of 1,000 megawatts. The Soviet organisations discussed India's feasibility study on Kahalgaon fuel burning plant (4 power units of 210 megawatts each) in Bihar and issued in October, 1983, the assistance proposals. 40

The bilateral scientific and technical cooperation in the use of low-calorie fuels and solar energy holds an important place. An impetus to it was given by the signing of the

38 Anatoli Mayorets, op.cit.
39 Ibid.
40 Ibid.

**Space** - Soviet-Indian cooperation in space studies dates back more than 20 years. Since late 1963, meteorological rockets with a ceiling of up to 100 kilometers have been blasting off an international launching pad in the vicinity of the fisherman's townlet of Thumba, a suburb of the city of Trivandrum.

The joint Soviet-Indian space flight marked the beginning of a new and important stage in the Indian national space programme. India was the fourteenth country of the 150 odd U.N. members to send a man into space. April 19, 1975, June 17, 1979 and November 20, 1981 were important milestones along the road of Soviet-Indian cooperation in space development. These were the days of launching the Indian satellites of Aryabhata, Bhaskara-1 and Bhaskara-2 from the Soviet Kapustin Yar Cosmodrome. Soviet specialists consulted their Indian counterparts at all stages of the development and manufacture of satellites and their preparation for launching. Soviet industry supplies a number of on board systems and units including the altitude control and stabilisation system, solar and chemical cells, computers and thermal insulation. The Soviet Medvezhile Ozera tracking station was actively involved in their flight programmes. These launchings confirmed what Dr. Vikram Sarabhai, first Chairman of the Indian National Committee for Space Research, once said that "if we need help in space technology we shall ask the Soviet Union. We need not only a satellite, but also the knowhow in building it, the knowhow in space technology, and only the Russians can give us such help."*\(^{41}\)

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*\(^{41}\) V. Kozynev, Vice Chairman of the Intercosmos Council under the USSR Academy of Sciences, *The Times of India*, New Delhi, 9 Aug 1986
In 1961, when Yuri Gagarin, the first space hero of the world came to India, he spoke of the time when Soviet and Indian cosmonauts would together explore the universe. India was grateful to him for his kind thought but attached no more importance to it because it did not have, then, even a space programme.  

India's space programme took shape when the U.S.S.R. launched the world's first Earth Satellite in 1957, India established an optical tracking station at the Nainital Observatory (U.P.) to watch it. In 1958 the Tata Institute of Fundamental Research, Bombay, began launching constant altitude plastic balloons to collect data on high altitude conditions. In 1961 space research was brought under the Department of Atomic Energy. In 1962 the Indian Council for Space Research was formed. A decision was soon taken to open a sounding rocket launching site to carry out systematic launchings. In 1969 the Indian Space Research Organisation (ISRO) was formed.

In 1982 India and the U.S.S.R. concluded an agreement to launch the fourth Indian satellite by a Soviet carrier. The 'IRSIA' satellite meant for the earth's natural resources research was launched into space from the Bayconur spaceport on March 17, 1980.

On 3 April, 1984, the Soviet Union launched the Soyuz T-11 Spaceship with an international crew of two Soviets and one Indian Cosmonaut, Rakesh Sharma. The joint Soviet-Indian space flight marked the beginning of a new and important stage in the Indian national space programme.

Soviet and Indian scientists continued their research into gamma astronomy using balloon-carried telescopes. These

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Air balloons start from a special ground in the vicinity of the Indian city of Hyderabad which lies on the geomagnetic equator. Soviet scientists recommended to consider the possibility of installing jointly. 43

**Agriculture** - The industrial sector has claimed nearly 99% of total aid from the U.S.S.R. to India. This, because firstly, in the Soviet development strategy agriculture was given a minimal role. Between 1921 and 1950 agriculture received a share of only 8% of the total investment, while industry drew as much as 70% of the total. Secondly, the Soviet Union was convinced that a scientific development of agriculture in India was possible only through socialisation measures, because collectivisation of land would facilitate mechanisation of agriculture. In the view of Soviet Union therefore, agricultural growth would only be a function of land reforms.

It is not surprising in this context that the little Soviet aid that India got for agriculture has flowed largely to state farms.

The Soviet Union has offered a gift of machinery and equipment constituting a composite unit for a farm of about 30,000 acres at Suratgarh, Rajasthan. This led to the establishment of the centralised mechanised farm, and it is the first and the largest of its kind in the country and is noted for production of improved seeds. The farm stretches over an area of 30,331 acres of which 27,300 acres are devoted to agricultural operations which yield good crops despite water shortage. The Suratgarh farm constitutes the core of India's seed growing farms. The organisational principles for large state farms evolved at Suratgarh are now utilised to set up

43 V. Kozyrev, op. cit.
state livestock breeding farms. Machine operators trained in
the farm now work in the fields in nearly all the Indian
states.

This followed by the setting up of yet another farm in
1964 at Jetsar, Rajasthan, with the help of machinery purchased
from the Soviet Government. The completion of a number of
irrigation projects in the Third Plan period opened up large
areas of wasteland. Here was an opportunity to set up more
large-sized mechanised farms, and the Soviet Government
agreed to gift machinery for five state seed farms, of these
four farms at Hirakud (Orissa), Hissar (Haryana), Jullunder
(Punjab) and Raichur (Karnataka) have already been set up.
The five year (1971-76) inter-governmental agreement on
scientific and technical cooperation in agriculture had been
extended for the next five years.

On 19 July 1973, the Union Minister of State for Agri-
culture, A.P. Shinde, inaugurated at New Delhi a photo exhibi-
tion "The Agriculture of the USSR", at the House of Soviet
Culture. Speaking about the Indo-Soviet collaboration in
agricultural research and development which has grown over
the years, Mr. Shinde said: "We now have a number of state
farms operated with Soviet machinery. We also have extensive
programmes of sheep improvement based upon Russian marine".
He added that he was grateful for the possibility that India
might also be able to intensify its sheep improvement programme
for the desert areas of Rajasthan and Gujarat by using the
famous Karakul sheep.44

The Soviet Union has offered to supply India, on a loan
basis, two million tonnes of food grains including certain
quantity of rice, giving one more magnificent proof of its

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44 News and Views from the Soviet Union, A press release
issued by the Information Department of the USSR Embassy
in New Delhi on 29 July, 1973, XXXII (168), pp.4-5
sincere friendship with this country. The offer was conveyed personally by Soviet Communist Party General Secretary, Leonid Brezhnev, in a special message to Prime Minister Indira Gandhi on 25 September 1973. In his letter to Mrs. Gandhi, Mr. Brezhnev said: "Taking into account Indi's food difficulties caused by unfavourable weather conditions and being guided by aspirations to develop friendly Soviet-Indian relations, the Soviet Government is willing to supply India two million tonnes of foodgrains including a certain amount of rice, on a loan basis." The despatch of the food grains can be started immediately Mr. Brezhnev informed Mrs. Gandhi. 45

Food Secretary G.C.L. Juneja, who announced India's acceptance of the Soviet offer at a press conference on 28 September 1973 said: "The charming feature of the offer is that it was made by our friend, the Soviet Union entirely on their own initiatives." 46

It is necessary to note that in 1971 and early 1972 the food situation deteriorated because India had to feed over 10 million refugees from East Pakistan. Again, floods in Uttar Pradesh, West Bengal and Bihar destroyed about 2 million tonnes of foodgrains. As India was unable to be independent of food imports, the supply from U.S.S.R. was welcomed.

In 1979 a protocol was signed by Dr. D.P. Gautam, Director General of the Indian Council of Agricultural Research (ICAR), and A.A. Geltehov, Soviet Deputy Minister of Agriculture, which took into account the provisions of the long-term programmes of cooperation signed in March 1979 when the Soviet Premier had visited India.

45 Patriot, New Delhi, 29 Sept 1973
46 Ibid.
Science and Technology - The first agreement on cultural, scientific and technological cooperation was signed in 1960. It opened the way from contacts between individuals or groups of scientists, to relations between scientific organisations. It has also helped India to advance its scientific education. And the two countries have been cooperating in fundamental research in a number of fields — agriculture, power generation, solar energy, atomic power, space programme, and several others.

Bilateral technological cooperation has come a long way. In the 1960s and 1970s, the Soviet Academy of Sciences and its branches and the Indian organisations conducted joint research into geology, geophysics, cybernetics, crystallography, magnetohydrodynamics (MHD) generators, petrochemistry, engineering, ferrous metallurgy and other spheres. The results of much of this research were later introduced into metallurgy, oil and gas industry, power industry, engineering and other industries.

In 1980-87, Soviet-Indian scientific cooperation was governed by an agreement between the U.S.S.R. State Committee for Science and Technology and the Indian Department of Science and Research. The document highlighted the development of alternate energy sources and new power generating technologies.

Both countries are keen about computer development. Apart from setting up a Faculty for Computer Studies at the Institute of Science, Bangalore, the U.S.S.R. has been cooperating with India in the computer field for a number of years. The U.S.S.R. is already producing super computers of 100 million operations per second.\(^47\)

\(^{47}\) Shankar Narain, "New Horizons in Science and Technology", The Times of India, 13 April 1987
Science Academy will continue their cooperation in fundamental research, particularly in earth sciences, physics, mathematics, chemistry, biology, etc. Further development of the computer and electronic revolution depends on production of new materials. The two countries are doing joint research in a number of fields to achieve this target. The Soviet Union itself has set the target of eliminating man's presence in the technological processes and production of high purity substances.

Radiation technology and synchrotron radiation are new technologies with immense industrial application potential. The U.S.S.R. has supplied an accelerator to the Bhabha Atomic Research Centre (BARC). Among its uses, are may be mentioned. It can disinfect food grains at 200 tonnes per hour and is much cheaper compared to chemical methods and improves storing. 48

India and the U.S.S.R. have been closely working on the problems of desertification and environmental problems. The two countries are particularly interested in three areas: fixing of moving sands, problem of desalination and fertility.

During the 10th session of the Inter-governmental Soviet-Indian Commission on Economic and Scientific-Technical Cooperation (Delhi 28-29 April 1986) an agreement was reached on widening production cooperation on long-term basis. A protocol on cooperation by the production of a wide range of products of machine-building was signed in January 1987 in Delhi. A programme in the field of production upto the year 2000 has been prepared. 49

48 Ibid.
49 V.I. Litvinenko, Economic Counsellor of the USSR Embassy in India, The Times of India, New Delhi, 13 April 1987
The Comprehensive Long-term Programme of Scientific and Technical Cooperation between the U.S.S.R. and India, signed by Mikhail Gorbachev and Rajiv Gandhi in Moscow on July 3, 1987, marked a major step along this road. The activities envisaged by the programme from three groups.

The first of them comprises joint works in the priority fields of science and technology with the aim of putting the results to use in the economics of the U.S.S.R. and India in the immediate future. They are research exercises in the sphere of biotechnology and immunology, including development of medicines, materials technology, laser and space technology, development and use (including industrial uses) of powerful electron accelerations, technology for surveying for underground water, computer technology and electronics, and development and use of catalysts. The prospects of dynamic economic and social development of the two countries are now determined by their scientific potential in the sphere of pure science. That is why the next group of the projects envisaged by the Comprehensive programme deals with the most important research work in fundamental sciences — mathematics, mechanics, physics, astronomy and sciences concerning the earth, biology, chemistry and ecology.

And, lastly, the third group of the areas for long-term development of cooperation, such as non-traditional (including renewable) energy sources, long distance transfer of power, machine-building and instrument making.

During the drafting of the Comprehensive Programme priority was given to the research projects in which the scientific and technical interests of the Societ and Indian scientists were manifested most graphically.

50 The Times of India, New Delhi, 4 July 1987
51 Ibid., 19 Nov 1988
The Soviet and Indian scientists pay particular attention to research and development in the field of electronic materials and hyperpure substances necessary for carrying out work relating to high temperature super conductivity. The first meeting of the Joint Council held in New Delhi on March 30-31, 1988 showed such a scheme for directing the programme and assuring its fulfilment is effective.

In the sphere of materials technology and development of new structural materials the scientists of the two countries have focused on the development and treatment of composite and superstrong materials, the application of diamond coatings, the development of articles by a super plastic moulding method, and on the treatment of materials in space. These works are being carried out successfully particularly in the field of production of friction materials and articles made of Indian iron ore — "blue dust". To conduct research in this area, the two sides have recognised it expedient to establish a joint Soviet-Indian centre for materials technology. The scientific-technical and organisational aspects of such a centre are now being considered. 52

Power metallurgy figures prominently among the fields of scientific-technical cooperation in which the results are not bad. The preparations for signing a general agreement on building a joint Soviet-Indian centre for dust metallurgy on Indian territory are nearing completion. Development of production processes and equipment for turning Indian iron ore ('blue dust') into iron powder and of titanium filters; and hydrodynamic compaction of powders by an explosion are to be the main directions in the work of this centre. All this means that the activity of the centre will be aimed at satisfying the needs of the two countries economies in the most up-to-date materials.

52 Ibid.
The project to set up an anti-poliomyelitis vaccine production unit in India, based on Soviet technology and with an annual capacity of 100 million doses is also at the organisational stage. An agreement on this was signed in Moscow on September 19, 1988.

The projects in the field of development and synthesis of new catalysts and creation of new production processes on their basis are much closer to technical reality. The Joint Soviet-Indian Council for implementing and coordinating the Comprehensive Long-term Programme of Scientific and Technical Cooperation instructed the respective organisations in both countries to prepare urgent proposals on establishing a joint Soviet-Indian enterprise for the industrial production of new catalysts and new catalytic technologies, developed within the framework of Soviet-Indian Cooperation and the national programme, and for the sale of them in India, the Soviet Union and third countries.

Soviet-Indian Cooperation in the priority fields of science and technology is carried out on a priority basis and is clearly aimed at accomplishing the most important economic tasks facing the two countries.

(B) Cultural Relations

Cultural ties between the two countries were put on a firm foundation after India became independent. Together with traditional exchanges such as of artists and exhibitions of pictorial and applied art, contacts were established between libraries and museums. The holding of joint symposia on problems of culture and art, the sharing of experience in choreography, music and musicology, and exchange of visits of painters became regular.
In the beginning of the 20th century the Russian people were already reading such classics as 'Panchatantra', 'Bhagavad Gita' and the 'Shakuntalam', translated into Russian. The Russian painter Vereshchagin, who visited India twice, left memorable paintings, particularly on the cruelty of the British rule in India.

An inter-governmental agreement on cultural, scientific and technical cooperation was signed between the two countries on February 12, 1960. This laid the firm foundation for coordination, at first in an annual, and later from 1967, on a biennial basis, of the programmes of cultural exchange. This cooperation has since grown in scale, and now embraces various aspects of social life like education, all forms of art, literature, radio, films, T.V., sports, etc. India and the Soviet Union signed the latest cultural agreement for the year 1985-1986 at New Delhi in February 1985.

Many Soviet theatres have productions based on Indian subjects and plays by Indian authors in their repertoires. The 'Ramayana', for instance, has been running at the Central Children's Theatre in Moscow for almost 24 years. Soviet spectators know and love 'The White Lotus' produced after a drama by Shudraka, 'Sohni Mahival' by Balwant Gargi, the musical 'The Big Wave of the Ganges', the ballets 'Chitra' and 'The Love Charm'. Not long ago the Moscow Stanislavsky and Nemorovich-Danchenko musical theatre had a premiere of the ballet 'Shakuntala', music for which was written by Soviet composer Sergei Balasanyan. Indian theatres stage plays by Russian authors: Gogol, Chekhov, Gorky, Simonov, and Sofronov.

Films - Cooperation in cinematography began actually in the forties. Soviet films by famous directors like Eisenstein, Pudovkin and Dovzhenko made a significant impact on Indian
viewers and film producers, particularly on directors like K.A. Abbas, Satyajit Ray, Mrinal Sen and others.

In 1954 the U.S.S.R. organised the first festival of Indian films in Moscow. As a result, names like Raj Kapoor and Nargis became highly popular in the Soviet Union.

This formed a new form of Soviet-Indian cinematographic cooperation. The first such film titled "A Journey Beyond the Three Seas" (or Pardesi) was produced on the visit of the Russian seafarer Afanasy Nikitin. Then followed a number of other co-productions — 'Rikki Tikki Tavi', 'The Black Mountain', 'Sunrise on the Ganges', and 'Ali Baba and Forty Thieves' of late, a documentary on Jawaharlal Nehru directed by A. Aldokhin and Shyam Benegal has been released, as also a feature film 'Sohni Mahival'.

As Indo-Soviet Cultural Agreement was signed in 1976, this was announced by the Minister of Information and Broadcasting Mr. L.K. Advani, who led an Indian delegation to the International Film Festival which began in Moscow on 7 July 1976. The Indian entry, 'Mrigaya' or the Royal Hunt, a film directed by Mrinal Sen was widely acclaimed at the festival.

A 20-day Festival of Indian Art and Culture was held in the Soviet Union in September 1977. A festival in which eminent musicians and dancers from India participated, was inaugurated at the Bolshoi Theatre by the Union Education Minister Dr. P.C. Chunder on 15 September 1977. A Film Festival and three exhibitions — miniatures, handicrafts and photographs — were also held. The U.S.S.R. held a Festival of Soviet Art and Culture in India in November-December 1977. These festivals were being held under the Indo-Soviet Cultural Exchange Programme.

53 *Indian Foreign Review*, 15 Sept 1977
The Minister of Information and Broadcasting, Vasant Sathe, said on 25 May 1980 that there were great possibilities of cooperation between India and the Soviet Union in the fields of cinematography and radio, television. On his return from Tashkent, where he represented India as leader of the Indian delegation to the Sixth Tashkent International Film Festival, he said that India could cooperate in the field of children's films with the Soviet Union which had made great advance in the field. He added that during his visit, he had very useful and fruitful discussions with the Soviet Minister for Cinematography, Ermash and the Chief of the Soviet Radio and Television. Sathe further said that the Indian films "sparsh" and "Ek bar phir" entered in the festival, had been very well received. The Joint Indo-Soviet production 'Alibaba Aud Chalis Chor' had already become very popular with the viewers.

Festivals - The festivals of the U.S.S.R. in India and the Festivals of India in the U.S.S.R. in 1987-88 played an important role in the cause of strengthening friendship and mutual understanding between the two countries and peoples. The festivals of the U.S.S.R. dedicated to the 70th anniversary of the Great October Socialist Revolution, opened on 21 November 1987. This was coincided with the time when the Festival of India in the U.S.S.R. was in full swing, which was dedicated to the 40th anniversary of India's independence. The festivals are an expression of deep respect of the peoples of both the countries for each other's history and culture, their adherence to the ideals of freedom and justice. Equally important is the fact that the holding of the festivals was possible only due to very good relations which shaped between

54 Ibid., 13 Sept 1977
the leadership of the two countries, whose bright manifestation was the exchange of official friendly visit of Mikhail Gorbachev to India and Rajiv Gandhi's visit to the U.S.S.R.

Suffice it to recall that nearly 3,500 Indian representatives, including performers, public figures, young leaders, scientists and sportsmen have visited the Soviet Union as part of the Festival programme. Nearly 150 Indian troupes performed in 140 Soviet cities. Some 2,000 artists participated.

Exhibitions held as part of the Festivals had become crucial to cultural exchanges between India and the Soviet Union. It was a serious scientific effort prepared jointly by Soviet and Indian organisations, including the Soviet Academy of Sciences, the Chief Administrator of Archives under the U.S.S.R. Council of Ministers, the Ministry of Culture of the U.S.S.R., the Soviet Foreign Ministry and the National Archives of India.

Summing up the results of the Festivals, the Chairman of the U.S.S.R. Organising Committee of Soviet-Indian Festival, Zakharov, said in conclusion: "We can say that both have written down a vivid page in the history of Soviet-Indian cultural relations. Any such festival is an example showing the whole world the fruits of new thinking and new political approaches in international affairs." 55 Zakharov described the festival as the diplomacy of the masses. He said that "everything thought by us was an endless field for the meeting of millions of citizens of the two countries in the name of peace, friendship and mutual prosperity." 56

55 A. Pozin, The Hindustan Times, New Delhi, 2 Nov 1988
56 Vasili Zakharov, USSR Minister of Culture and Chairman of the USSR Organising Committee of Soviet Indian Festival, The Hindustan Times, New Delhi, 21 Nov 1987
Education - Indo-Soviet cooperation in education began in 1956 with the signing of UNESCO protocol on the establishment of the Indian Institute of Technology in Bombay with Soviet assistance. Starting with 100 students in 1958, the Bombay IIT was the first institute in the country to have introduced a five year academic course for students, as well as a two-year postgraduate course.

Indo-Soviet cooperation in the field of education covers the granting of scholarships to students, promotion of higher scientific education in India, production of Soviet textbooks in India, establishment of direct relations between Soviet and Indian educational establishments, promotion of the study of Russian language in India, and others. The U.S.S.R. has taken part in organizing four autonomous departments at large Indian universities devoted to aeronautics, metallurgy, geophysics and automatics and computers. Specialized technical training schools were set up with Soviet assistance in the cities of Baroda, Bhilai, Hyderabad, Ranchi and Bhopal to produce middle-level technicians.

An Indo-Soviet Joint Commission has been set up for cooperation in the field of social sciences. A centre for Russian studies was opened at Jawaharlal Nehru University in 1965.

The study of Russian language is becoming more and more popular in India. Today Russian language is being taught at most of the Indian universities.

Cooperation in Book Publishing - A major field of Soviet assistance at present in the field of education is in providing inexpensive and good textbooks to university students. Already over 450 Soviet textbooks have been adopted for Indian
languages. An Indo-Soviet Textbook Board has been set up for this purpose and it meets yearly in order to select books and arrange for their publication. The books are produced at low cost for students.

Publication of Soviet classics and modern work in Indian languages is another major activity in the educational field. Soviet publishing houses are bringing out translations in almost all the major Indian languages, thus helping students and readers to acquaint themselves with the rich literary traditions of the Soviet people. Russian and Soviet classics occupy a prominent place in the literature now made available in India.

At the same time, Indian classics and modern works are being translated into the Russian language. Tagore, Gandhi, Nehru, Prem Chand, Mulk Raj Anand, Sardar Jaffri and others are well known names today among the Soviet readers. Tagore's "The Gardener" and "Gitanjali" were published as early as the 1920s in the Soviet Union. The overall editions of Indian books published in the languages of the peoples of the U.S.S.R. has already topped the 30 million copies mark.

Soviet copyright agency VAAP has been cooperating with several Indian publishers such as Federation of Indian Publishers, The National Book Trust, Oxford Press, Ajanta Books, Arnold Heineemann, Vikas, Sterling, etc. 57

Thus, academic exchange became a regular feature of Indo-Soviet cooperation. It takes place under the Cultural Agreement signed by the two countries. As a follow-up of the Cultural Agreement, Joint Committees of the representatives of the two governments have been regularly reviewing and

57 Nikolai Chetverikov, Chairman, VAAP Board, The Times of India, New Delhi, 24 Nov 1987
drawing up cultural exchange programmes as means of implementation of the Cultural Agreement. So far 10 annual and 7 biannual programmes have been successfully implemented. 58

A large number of students/trainees from India are visiting U.S.S.R. for studies. A survey has indicated that in 1985-86, about 329 persons from India were studying in the U.S.S.R. Out of it 326 were trainees. The number of U.S.S.R. students studying in the Indian universities is, however, very negligible. In 1985-86 one student from the U.S.S.R. was in undergraduate courses and one was in postgraduate course. 59

Cooperation in the field of sports is now gaining momentum. The Soviet Union provides sports coaches to India and teams have been exchanged in volleyball, football, and other sports fields. Since 1983 the sports exchange is being implemented under the Soviet-Indian Sports Protocol which provides good opportunities for expanding the scope of cooperation of great importance in promoting sports relations. A protocol was signed in December 1985 for the construction of a large sports complex in Bangalore with Soviet assistance.

58 Anil Bordia, Secretary, Department of Education, The Hindustan Times, New Delhi, 18 Nov 1988
59 Ibid.
MAJOR SOVIET-INDIAN PROJECTS AND ASSISTANCE

(Industrial, Agricultural, Scientific, Educational)

FERROUS METALLURGY

- Bhilai Steel Plant (with raw material facilities)
- Bokaro Steel Plant
- Vizag Steel Plant
- Metallurgical & Engineering Consultants Ltd. (MECON).
- Ranchi R & D Centre for steel research, Ranchi.

NON-FERROUS METALLURGY

- Aluminium Plant, Korba
- Bauxite and Alumina Plant project.
- Andhra R & D Centre for nonferrous metallurgy, Korba.

HEAVY ENGINEERING

- Heavy Machine Building Plant, Ranchi.
- Heavy Electrical Equipment Plant, Hardwar.
- Mining and Allied Machinery Plant, Durgapur.
- Training Institute for Designing Metallurgical Equipment, Ranchi.

OIL INDUSTRY

- Drilling and Exploration (Gujarat, Tamil Nadu, West Bengal, Assam, Himachal Pradesh, etc. and offshore exploration along the costs of India).
- Barauni Refinery, Bihar.
- Koyali Refinery, Gujarat.
- Mathura Refinery, U.P.
Training:
- Hind Oil Designing Institute, Baroda.
- Research and Training Institute, Dehra Dun.
- Drilling Technology Research Institute, Dehra Dun.
- Institute for Reservoir Development, Ahmedabad.

COAL INDUSTRY
- Surkachar Coal Mine
- Bank Coal Mine
- Manikpur Coal Mine
- Kathara Coal Washery
- Nigahi Opencast Mines
- Jayant Opencast Mine
- Mukunda Coal Mine
- Jhanjra Coal Mine
- Raniganj Coal Mine
- Tipong Coal Mine
- Kumari Coal Mine
- Sitanala Coal Mine
- Assistance to Singareni Colliery Co (Andhra).
- Development and Modernisation of Coal Washeries.
- Central Mechanical Workshop, Singrauli, for repair and production of mining equipment and materials.

Training
- Coal Preparation and Engineering Institute, Ranchi.
- Assistance for Coal gasification in Rajasthan.

POWER INDUSTRY
- Neyveli Thermal Plant, Tamil Nadu.
- Korba Thermal Plant, Madhya Pradesh.
- Obra Thermal Plant, Uttar Pradesh.
- Patratu Thermal Plant, Bihar.
- Harduaganj Thermal Plant, Uttar Pradesh.
- Bhakra Hydropower Station, Punjab.
- Mettur Hydropower Station, Tamil Nadu.
- Balimela Hydropower Station, Orissa.
- Lower Sileru Hydropower Station, Andhra.
- Hirakud Hydropower Station, Karnataka.
- Linganayaki Hydropower Station, Karnataka.
- Vindhyachal Thermal Power Station, Singrauli.
- Kahalgaon Thermal Power Station, Bihar.
- Bakreshwar Thermal Plant, West Bengal.
- Tehri Hydropower Plant, Uttar Pradesh.

**MEDICAL INDUSTRY**

- Anti-Biotic Plant, Rishikesh.
- Synthetic Drugs Plant, Hyderabad.
- Surgical Instruments Plant, Madras.

**PUBLIC HEALTH**

Cooperation in combating mass infectious diseases like malaria, smallpox, cholera, etc.; in Ophthalmology; in preparation of vaccines and blood preparations and others.

**TRANSPORT & COMMUNICATION**

- Calcutta Metro system.
- Troposcatter telecommunication link between Moscow and Delhi.

**INSTRUMENTATION & AUTOMATION**

- Precision Instrument Plant, Kotah.
- Optical Glass Factory, Durgapur.
AGRICULTURE
- State seed farms (in all six).
- Plant Development: Sunflower, beetroot.
- Canning Factory.
- Assistance for production of specialised cans and packaging material.
- Tractor Plant, Loni, U.P.
- Training: Workshop for training middle level farm hands. Factory for production of lining materials for irrigational canals.
- Assistance for Dam building.

SCIENCE & TECHNOLOGY
- Scientific Corporation in the development.
- MHD power generation.
- Protection of metals from corrosion.
- Powdermetallurgy.
- Standardisation and metrology.
- Construction materials.
- meteorology.
- Lasers.
- Biotechnology.
- The physics of high temperatures and pressures.
- Catalysis.
- Electrical metallurgy.
- Oceanography.
- Science information (in all 112 subjects)
- Solar Energy Development.
- Space Research and Development.
- Nuclear energy.
EDUCATION

- The Indian Institute of Technology, Bombay.
- Autonomous faculties for:
  - Aircraft Designing (Bombay).
  - Metallurgy (West Bengal).
  - Geophysics (Hyderabad).
  - Automation and Computer (Bangalore)

and a number of technical schools for promoting scientific education.