INDO-SOVIET PROJECTS – A HELPING HAND IN THE ECONOMIC UPLIFTMENT

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ABSTRACT

The major objective of India's Second Five Year Plan was to increase the total national income of 25% by 1961 through increase in investment by the Government ; the extension of public sector along with the expansion of industrial capacity particularly heavy industries; the financing of government outlay by the creation of money; and also the partial or complete nationalization of certain industrial and commercial activities; the large –scale subsidization of cottage industries as well as massive assistance to the cooperative movement and state participation. The expansion of iron and steel industry was given top priority because the progress of a nation economy depends on the levels of production of these materials. A wide range of industrial machinery and capital equipment, such as locomotives for railways and power plants for the generation of electricity includes heavy engineering industries. The strengthening of heavy engineering industries and workshops in the country would be helpful in undertaking the tasks of construction of steel plants, fertilizers factories, etc.

The establishment of heavy foundries, forges and structural shops is necessary. Thus the establishment of these facilities which is primary for the development of the manufacture of heavy industrial machinery must be undertaken as early as possible. The expansion of steel industry is above all in the priority list . The final result of the Second Five Year Plan in the 60s brought about impressive results both in terms of aggregate growth rates as well as in changing composition in industrial output which was a shift from the traditional to modern industry. According to the Industrial Policy Resolution in 1956, the large part of the investment was in the capital goods industries which where all government owned enterprises. As stated in the *Second Five Year Plan,* the Resolution had to be governed by the principle laid down in the Constitution and the objective of Socialism . As a whole over three-fifths were of the heavy industry programme and over three-quaters of the programme was in steel capacity which were all government –owned capacity. The core sectors in the projects were the steel plants and the coal and lignite programmes both in the public and private sector, the programmes of the railways and major ports, and certain selected power projects which were covered by foreign aid(according to appraisal and prospects). A joint study group on cooperation in the field of economic planning was signed between Planning Minister, D.P Dhar, and the Soviet Deputy Prime Minister N. K Baibakov includes exchange of experience and knowledge. Its fields include:

- Economic forecasting;
- Methodology of annual, medium and perspective planning;
- Formulation of projects and programmes;
- Methods of monitoring and evaluation of planned programmes and projects
- Planning the supply of materials
- Exchange of published reports and materials

Source: Mehta,1975 pp-31-32

During the L.I. Brezhnev visit a 15 year agreement regarding economic cooperation, talks on round credits, debt rescheduling and technological cooperation for expanding bilateral economic and trade cooperation which aimed at developing the economies of the two countries in production collaboration and in the sharing and use of uptodate technical and technological know-how on mutually- favourable terms. The following items qualified for Soviet assistance under the Seven- clause agreement:

a) Iron and steel and non-ferrous metals products;
b) Oil and petro- chemicals;
c) Coal and other minerals;

d) Power engineering;
e) Shipping and other industries; and
f) Agriculture

The specific projects mentioned in the agreement were:

i. Expansion of Bhilai and Bokaro Steel Mills to an annual capacity of seven and ten million tonnes respectively;
ii. Construction of the six million tonne Mathura refinery;
iii. Development of the Copper mining complexes in Malanjkhand in Madhya Pradesh;
iv. Construction of the Calcutta underground railways.

The Indo- Soviet Economic Projects:

- **METALLURGY:**

➢ Bhilai Steel Plant, Bhilai, M.adhya Pradesh
➢ Bokaro Steel Plant, Bokaro, Bihar
➢ Steel Casting and Sheet Rolling Plant , Arlonam, Madras, Tamil Nadu
➢ Aluminium Smelting Plant, Korba, Madhya .Pradesh
*Steel File Factory (Pvt.Ltd.),Calcutta, West Bengal

- **ENGINEERING:**

➢ Heavy Machine Building Plant , Ranchi, Bihar
➢ Heavy Electrical Equipments Plant, Ranipur , Hardwar
➢ Mining and Allied Machinery Plant, Durgapur, West Bengal
➢ Precision Instrument Plant , Kota,Rajasthan.
➢ Central Electrical and Mechanical Workshop, Korba, M.P
➢ Compressors and Pumps Plant, Allahabad, U.P
Mechanical Instruments Plants, Pudusari, Plaghat, Kerela-(Cancelled)

POWER PRODUCTION:

11 THERMAL POWER STATIONS; 5 INDEPENDENT POWER STATIONS:

➢ Thermal Power Staion, Neyveli, Tamil Nadu.
➢ Thermal Power Station , Obra, Uttar Pradesh.
➢ Thermal Power Station, Patratu, Bihar.
➢ Thermal Power Station , Harduaganj, Uttar Pradesh.
➢ Thermal Power Station, Korba, Madhya Pradesh.

- **POWER STATIONS AT INDUSTRIAL PROJECTS:**

➢ Thermal Power Stations at Bhilai , MP.
➢ Thermal Power Station at Barauni , Bihar
➢ Thermal Power Station at Koyali , Gujarat
➢ Thermal Power Station at Hardwar U.P
➢ Thermal Power Station at Durgapur, West Bengal.
➢ Thermal Power Station at Ranchi , Bihar

- **HYDRO POWER STATIONS:**

➢ Hydro-Power Station (Right – Bank, Sutlej), Bhakra, Punjab
➢ Hydro Power Station Mettur Tunnel, Mettur, Tamil Nadu
➢ Hydro- Power Station Hirakud-2 , Orissa
➢ Hydro- Power Station Balimela, Orissa
➢ Hydro Power Station Lower Sileru, Andhra Pradesh

Total Projects: 16- Thermal 11(6 Industrial Projects + 5 Hydro- Power Projects)
Total Assistance: Rs 110 crores(RS 90 crores for thermal+ RS 20 crores for hydro- power station)
25% of power generation in India by Soviet Aided Power Projects.

- **OIL INDUSTRY:**

Prospecting in Gujarat- 24 oil fields(in Lunej, Cambay , Wadsar, Ankaleshwar, Kalol, Kosamba, Sanand,Olpad,Nawagaon, Kim, Kathana,Mehsana,Dholka, Kadi, Brakol, Vosna, Walod, Dumas, Tharad, Vaso, Bachrju,Sobhasan, Kauka, and Wataman).
ASSAM: - 5 Oil fields

- Disangmukh (Sibsagar)

- Rudrasagar
- Lakhwa
- Galeki
- Borhollo

West Bengal 1 oil field in Badra;Himachal Pradesh 1 oil field in Jawalamukhi; Punjab 1 oilfield in Hoshiapur.; Kashmir prospecting

- **The Offshore Seismic Survey**

: In Bay of Bengal; Kauvery Delta, Tamil Nadu and Drilling in Cambay and Kutch, Gujarat.

OIL REFINING: Barauni Oil Refinery in Bihar; Koyali Oil Refinery in Gujarat; Mathura Oil Refinery in Uttar Pradesh.

MINING:

1. Rajhara Iron Ore Mine, Rajhara, Bhilai, Madhya Pradesh;
2. Nandini Lime Quarry, Nandini, Bhilai, Madhya Pradesh;
3. Dalhi Iron Ore Mine, near Rajhara, Bhilai, Madhya Pradesh;
4. Manekpur open-cast Mine, Manikpur, Korba, Madhya Pradesh;
5. Banki Underground Mine,Banki, Korba, Madhya Pradesh;
6. Surakachhar Colliery,Surakachhar, Korba, Madhya Pradesh;
7. Aluminium Smelter Plant,Korba, Madhya Pradesh;
8. Coal Washery, Kathara, Bihar
9. Ramgarh, Pundi,Teping and Kedlya Mines, Bihar

*Karagali factory for Korba Underground

PHARMCEUTICAL

1. Anti-Biotics Plant, Virabhadra, Rishikesh, Uttar Pradesh ;
2. Synthetic Drugs Plant, Sanatnagar, Hyderabad, Andhra Pradesh;
3. Surgical Instsruments Plant, Guindy, madras, Tamil Nadu;
4. Optical Glass Factory, Durgapur, West Bengal

*Phyto- Chemical Plant, Neria mangalam, Palghat, Kerala (Project got cancelled)

AGRICULTUTRE:

1. Mechanised Farm, Suratgarh, Rajasthan;
2. Mechanised Farm, Jetsar, Rajasthan;
3. Five State- seed Farms include
    a. Raichur , Mysore;
    b. Hissar, Haryana;
    c. Hirakud, Orissa;
    d. Cannanore, Kerala;
    e. Jullundur, Punjab;

*Tractor Plant, Loni, Uttar Pradesh (in private sector)

TECHNICAL TRAINING INSTITUTIONS:

1. Indian Institute of Technology, Powai, Bombay;
2. Technical School, Cambay,ONGC;
3. Drilling and Engineering Director, Dehradun;
4. Institute of Technical Studies, Bhilai;
5. School of Automation at Indian Institute of Sciences, Banglore;

MISSCELLANEOUS:

1. Pre- Fabricated Housing Plant, Ennore, Madras;
2. Refractories Plant, Bhilai, Madhya Pradesh, Madhya Pradesh;

*Textile Mill, Premnagar, Dehra Dun (Private)

The text of the agreement that was signed on 29 November, 1973, New Delhi on Cooperation in the Planning Commission of India and the State Planning Committee of the USSR(GOSPLAN of the USSR) states that for the planned development of economics the Article 6 of the Agreement for setting up othe Inter-Governmental Indo –Soviet Commission on Scientific, Economic and Technical Cooperation between the Government of India and the USSR Government that agreed to the following which includes the joint study for cooperation in the field of planning where the Study Group includes the Members of Planning Commission of India with the representatives of Central Ministries or State Governments and also the officials of the State Planning Committee(GOSPLAN). The basic significance would be the exchange of experience and knowledge in the field of economic forecasting, the formulation of projects and programme,

methods of annual , medium and perspective planning, the supplies of materials and also the exchange of reports and materials. The problems would be solved by mutual agreements and the meetings were to be scheduled once in a year in New Delhi and Moscow by turn. The Agreement stated that the leaders of Indian and Soviet sides of the Study Group would determine by the mutual agreement the agenda and the time limit of each meeting.

The significant contribution of the Indo- Soviet included the delivery of machines and equipments, transferring of productivity experience and technological know-how for the scientific and technical education. The field of scientific and technological research led to a close cooperation between CSIR(Council of Scientific and Industrial Research) and the Soviet Academy of Sciences. The features of the cooperation were: " 1) exchange of experts and scientists to ensure exchange of scientific experience, conferences and meetings, delivery of lectures and assistance to organisational and scientific matters; 2) fellowship of young scientist ; 3) exchange of information on scientific research , data about scientific instutuitions and scientists as well as information and ,materials of interest; and 4) cooperation among libraries , information centres and scientific instituitions for exchange of books , periodicals and bibliographies." Scientific ties between India and Soviet Union had started since 1925 when Dr C.V Raman took part in the bi-centennial of the USSR Academy of Sciences. then again in 1948, Soviet scientist have been participating in Indian Science Congresses. The agreement on scientific, cultural, and technical cooperation between USSR and India was signed in 1960 which led to closer ties and contacts between the scientists of the two countries. It also provided for the exchange in scientific data for exchanges in the fields of specialised and higher secondary education, fundamental sciences and health. The major institutions created by USSR for the promotion of science in India includes Indian Institute of Technology, Bombay and four major department of scientific study which includes the aeronautics department at the Indian Institute of Technology, Bombay, the geo-physical department of Osmania University, The metallurgical department of the Indian Institute of Technology at Kharagpur, and the computer and electronics department at the Indian Institute of Science, Bangalore. A joint Soviet- Indian Committee was set up in 1967. The agreements on scientific cooperation and Inter - Governmental agreements signed by USSR Academy of Sciences with the Department of science and Technology, The Indian National Science Academy and The Indian Space Research Organisations have served scientific exchanges and cooperation on areas such as chemistry of natural products, development of high yielding, short duration and long-staple cotton, biology of plant pest and others have helped agriculture. Also the areas of ground water studies, geophysical exploration, salination studies and reclamanation.

On October 2, 1972, Mr C. Subramanian, the then Minister for Industrial Development, Science and Technology, and Academician V.A Kirillin, Chairman of the State Committee of the USSR Council of Ministers for Science and Technology, signed in Moscow an agreement on cooperation in the sectors of technology and applied sciences. The items listed are in the joint research programme includes crystal growth, cybernetics, petro-chemistry, machine tool building, ferrous metallurgy, water conservancies, standardisation as well as joint mineral and oil exploration, etc . Joint-radio astronomical explorations and gamma-astronomy were the fields of cooperation and both the countries also cooperated in the study of lunar soil and meteorites. The areas on joint working between India and Soviet Union on the Department of Science and Technology includes: Magneto hydro dynamics(MHD) power generation; transfer of electric power by ultra voltage lines; alternative sources of energy, coal utilization in terms of liquid fuel from coal by hydrogenation ; synthetic natural gas; formed coke for domestic industrial needs; intensification of the coal combustion process to ensure sulphur trapping and utilisation of its mineral components; corrosion protection for metals; water resources management for integrated utilization of water reserve(inner and intra basin transfer of rivers), mechanised irrigation with utilization of surface and underground sources; use of prefabricated structure in the lining of irrigation system and in drainage; application of directional blasting techniques; machine tools, cutting tools and allied instruments including machine functioning in tropical conditions; control system;, automated control in signalling and operational disciplines in railway transportation ; building construction technology including bilding materials and architectural planning; design aspects and construction techniques for large –scale industrial housing developments indiverse climatic conditions; soil and rock mechanics for foundation engineering; construction under high seismic conditions;techniques of grain storage including construction of silos grain elevator; wielding technology; power metallurgy; industrial design; rubber processing ; pesticides and other ecological problems;abrasive; light industry including textiles and leather production; dyeing and finishing of man-made and natural fibres and fabrics;standardisation and metrology; saline and alkaline soil".

The significant agreements signed between the two countries in areas of science and technology are:

- Agreement between Government of USSR and the Government of India in the field of Applied Science and technology of October 2 , 1972.
- Cooperation of Scientific-Technical in the Field of Agriculture of June 18, 1971. Protocol was signed once in two years along with the protocol of 1979 for assistance to Suratgarh farm.
- Protocol between USSR Academy of Sciences and the Science and Technology Department of February 18, 1975.
- Protocol between the Academy of Sciences of the USSR and the Indian Space Research Organisation of April 22, 1975.
- Agreement between the Hydro-meteorological Services of The USSR and the Department of Atomic Energy of the India Government of May 14,1970.
- Agreement between the Government of the USSR and India on the Peaceful Utilisation of Atomic energy on 22 January, 1979.
- Agreement between the Soviet Academy of Sciences and the Indian National Science Academy of February19, 1975.

  To fulfil the criteria of the objectives of cooperation, the State Committee for Science and Technology and the Department of Science and Technology signed in March 1980 a complex programme on cooperation in the field of applied and fundamental science for 1980-83. It was also intended to develop the Long-Term provisions in the Programme of Cooperation signed in March 1979.The fields of cooperation according to the Long Term Programme include science and technology; energy and energy resources; natural resources and environment; meteorology; agriculture; human settlements; ferrous and non-ferrous mettalurgy;powder metallurgy; corrosion prevention;tropicalisation ;industrialisation ;industrial design; electronics; computer science; and technology; communications; light industry; standardisation and metrology; patent information; cooperation in the field of scientific and technical information system; and space research. All of them have direct application to the industrial processes.

The Indo-Soviet cooperation on the field of space research started on 1962 after the helping hand for the establishment of the Thumba Equatorial Rocket launching Station to carry out scientific investigations of the Upper atmosphere to conduct sounding rocket launches. The meteorological sounding rocket programme signed a Memorandum of Understanding in May 1970 which includes a) the study of the link of stratomespheric processes with solar activity , and b) the study of the structure and circulation of the upper atmosphere of low altitude. With the help of Soviet Union , India has been able to build and launch satellites where Soviet Union has has provided the facility of rocket and photographic cameras help fix positions of points on the ground to an accuracy of a few metres"(Dhawan,1981). There is a necessary element to carry out this accurate position of satellite orbit fixing also important for other space-based applications such as communication, remote sensing etc. An carriers . Prof Dhawan: " One of the important uses of satellite is for fixing the positions of different points on the ground with a high degree of accuracy. Geodesy , the science which fixes positions of point on the earth has gained substantially from space technology. A number of geodetic satellites are in orbit which in conjunction with certain ground based equipment like lasers agreement was signed between the Academy of Sciences of USSR and the Indian Space Research Organisation in 1975 where USSR supplied camera and laser equipment to India for installation at Kavalur in South India . The station was successful in tracking a number of international as well as India satellite like Aryabhatta and Bhaskara and also improve in tracking the ISRO capabilities of tracking network. The Soviet equipment expert advice assisted in supplementing the Indian efforts towards self-reliance and has helped accelerate the Indian efforts towards achievement of the goal of development through space technology.

In 1954, a public sector in drugs and pharmaceuticals began when the Hindustan Antibiotics Limited was set up and on 29 May,1959 an Indo – Soviet Agreement for cooperation in drugs and pharmaceuticals was signed which gave birth to the Indian Drugs and Pharmaceuticals (IDPL) in1961.

Soviet Union aid helped in providing all necessary designs, equipment,technological document and materials. Soviet experts assisted in building and assembly, in adjusting the machinery and putting it into operation. The sharing of skill, knowledge and experience with Indian counterpart. An antibiotics plant at Rishikesh is largest in South- Asia with annual production capacity of around 290tonnes of antibiotics ahich include penicillin, streptomycin,dihydrostreptomycin,chlorotetracycline,oxytetracycline and nystatin. The synthetic drugs plant at Hyderabad has an annual capacity of 850 tonnes of drugs to combat diseases like T.B, epilepsy and liver ailments. Here the drugs include phenacetin, sulphacetamide,sulphaguandine,sulphadimidine,sulphacetamide sodium, vitamin B and B2, analgin,amidophyrine,INH,nicatinamide,piperazine salts, phenobarbitone, PAS, diatrazine citrate and Para-

acid. According to the Haithi Committee, " the public sector has achieved an overall production of substantial capacity particularly in the field of synthetic drugs, and has demonstrated the competence of this sector to handle the growing needs of the country in this highly technology-intensive area of drug production"(Haithi Committee,1975)

India's Defence Industry and Soviet Assistance

The Soviet assistance towards the base for India's defence industrialisation cannot be ignored. The start began with the production of MiG's in India. After making India self- reliant in steel and oil, Soviet Union extended its help in the sphere of India's defence preparedness. After 1961, economic relations between the two countries gained importance after being laid a strong foundation . Initially, there was heavy dependence on Western countries, particularly the Great Britain and United States, for the supply of arms and armaments for the three wings of its defence forces. India was always keen in purchasing supersonic aircraft along with getting a license and the technical know-how for its manufacture and also the credit facilities should be available for the initial purchase as well as the setting up of the manufacturing facility which neither of the Western countries, France nor Great Britain provided.

But Soviet Union was fulfilling all the Indian conditions which India was searching for the supersonic planes. It not only provided MiG- 21 supersonic fighter – interceptor planes on credit against rupee- payment but also was ready to provide the technical know- how for their manufacture in India. The offer was accepted by the Indian side with Soviet Union in 1962 for the supply of MiG planes and also for the establishment of a MiG factory in India. When pressure from both United States and Great Britain build up to cancel the deal of MiG-21 when United States refused to supply F-104, Nehru angrily remarked that it was , " our freedom to buy anywhere we like and what we like" (Nehru, 1962)Another agreement was signed on 1964 between Soviet Union and India where Soviet Union provided India four squadrons of MiG-21s, light tanks, missiles, helicopters and other weapons. India paid in rupees for goods produced in India over period of 10 years and the rate of interest was two percent per annum. The supply of submarines and the agreement on MiG-21 was a turning point in India's defence history.

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