

# Technology Imports Into Poland

*Effort to rapidly modernize industry by importing technology largely successful; massive export drive failed, however*

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My purpose in this paper is (1) to provide as accurate as possible a picture of the imports of technology by Poland in the present decade and (2) to attempt a critical diagnosis of massive imports of technology. These ultimately did not lead to the desired effect in terms of maintaining a steady rate of economic growth and improvement in the balance of payments.

By nature, this critical analysis should include an analysis of the internal political situation. However, the author decided to limit the article to purely economic and professional considerations.

Poland, being the second biggest country member of CMEA (Council of Mutual Economic Assistance), after the USSR, was and will be the focus of attention of the economic world. It is therefore considered useful to have a deeper look into "licensing" or "technological" policy of this country and attempt a critical assessment of the last 10 years.

Conclusions drawn from the experience of Poland may be of interest not only to other countries as importers of technology, but also to suppliers.

This paper will look into the inflow of technology through the use of the following basic channels:

1. Licensing agreements.
2. Supply of technical documentation.
3. Industrial cooperation agreements.
4. Supply of turn-key plants.

The basic need behind the massive inflow of technology starting in 1971 was a very ambitious program of modernization of industry and the economy as a whole, with key elements of acquiring modern technologies developed in the Western countries of Europe, U.S.A., and Japan.

It was considered vital to develop the modern sectors of the economy to bridge the technological gap. Further, it was considered important to rapidly boost the export potential.

## LICENSING AGREEMENTS

From 1971 to 1980, Poland concluded 422 licensing agreements<sup>1</sup> with fees and royalties totalling 635 million.<sup>2</sup> These figures include only agreements with market-economy countries.

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It should be mentioned that between 1949 and 1970 Poland concluded only 189 licensing agreements valued at some \$120 million.

The detailed downward trend of the values, the direction of imports, and the industrial sectors are indicated in Table 1.

The table shows a concentration of inflow of technology into the machinery and equipment sectors (capital goods), the transport equipment sector (automotive), and chemicals. Such a pattern follows the goals set in planning where modernization of key industrial sectors was foreseen. Sectors like energy and mining did not receive, as it is known at present, sufficient technological inputs.

## THE SECTORAL AND GEOGRAPHIC BREAK-DOWN OF LICENSING AGREEMENTS BY POLAND 1971-1980

	Number of contracts <sup>1</sup>		Value <sup>2</sup>		
	Share%		of the total		
<b>Industry:<sup>3</sup></b>					
Machinery & Equipment	180	42.7	29.5	129	
Transport Equip.	68	16.1	22.7		
Electrical Equip.	46	10.9	14.8		
Chemicals	45	10.7	17.8		
Electronics & Precision instruments	35	8.3	5.5		
Metalworking Ind.	17	4.0	2.9		
Mineral Industry	12	2.8	3.8		
Other	19	4.5	2.9		
<b>Country:</b>					
Federal Republic of Germany	113	26.8	10.0		
France	64	15.2	24.6		
United States	44	10.4	22.4		
Great Britain	41	9.7	8.8		
Italy	36	8.5	14.5		
Sweden	31	7.3	5.5		
Japan	22	5.2	3.2		
Switzerland	18	4.3	2.9		
Belgium	12	2.8	1.2		
Netherlands	10	2.4	0.8		
Other countries	31	7.4	6.1		
<b>TOTAL</b>	<b>422</b>	<b>100.0</b>	<b>100.0</b>		

1. Owing to differences in contract terms, annexes to already existing contracts were treated as separate agreements.

2. Contractual value of the licensing fees.

3. According to the Polish Foreign Trade Classification

Source: J. Cieslik "Polish experience in regulating imports of technology" p. 4

Table 1

In terms of supplier distribution, the largest share was held by France (24.6% of the total value) followed by the U.S.A., Italy, and the Federal Republic of Germany.

The total value of payments related to acquired

licensees (fees and royalties, imported machinery and equipment, raw materials and components) in the period 1971-1980 amounted to about \$5,090 million. Some 8% of the total commodity imports by Poland was from market economy countries. This share of technology imports to total imports, should be considered as a *high ratio*, as the average shares in other countries usually oscillated between 2-3% (for developing countries) and around 0.5-1% for industrialized countries.

#### SUPPLY OF TECHNICAL DOCUMENTATION

The exchange of technical documentation, be it free of charge or on commercial terms, used to be a popular vehicle for technology transfer among CMEA member countries. Some of the transfers of technology in this form took place with market-economy countries, and in the period 1976-1980 Poland purchased technical documentation worth \$5.8 million in concluding 18 agreements.

Table 2 provides a detailed breakdown of purchases in terms of number of contracts concluded, sectors breakdown, and supplying countries.

#### THE SECTORAL AND GEOGRAPHIC BREAK-DOWN OF AGREEMENTS<sup>1</sup> FOR THE PURCHASE OF TECHNICAL DOCUMENTATION BY POLAND 1976-1980

	Number of contracts		Value
	Share%	% of the total	
<b>Industry<sup>2</sup></b>			
Machinery & Equip.	7	38.9	65.8
Electronics & Precision Instruments	3	16.7	1.1
Chemicals	2	11.1	7.0
Other	6	33.3	26.1
<b>Country</b>			
Federal Republic of Germany	8	44.4	19.8
Italy	3	16.7	7.9
France	2	11.1	17.6
Great Britain	2	11.1	0.5
Japan	1	5.6	52.4
Other countries	2	11.1	2.7

1. Agreements on the sale of technical documentation not related with licensing agreements.

2. According to the Polish Foreign Trade Classification

Table 2

#### INDUSTRIAL COOPERATION AGREEMENTS

Since early 1970 a popular vehicle of cooperation between manufacturing corporations in market-economy and planned-economy countries were the so-called industrial cooperation agreements which in their scope usually went beyond simple marketing and licensing relationship. They often encompassed joint R&D and designing work, supply of components, and assembly of the final product.

During the period 1976-1980, some 90 agreements of this type were signed and the total turnover resulting from those agreements reached the amount of about one billion dollars.

The foreign collaborators came from the Federal

Republic of Germany (34 agreements), Sweden (12), the U.S. and United Kingdom (6 each).

#### SUPPLY OF TURN-KEY PLANTS

In terms of turn-key plants, the characteristic for such imports in the case of Poland used to be that all civil works were usually made by Polish contractors. From 1976 to 1980 Poland imported turn-key plants worth \$4.4 billion dollars, about 7% of the total imports from developed-market economy countries. It should be stressed that from 1973 to 1978 almost 78% of those plants were purchased. Out of the total, 39.9% of the plants were for the chemical industries, 23% in capital goods while pulp and paper represented about 10% of the total imports.

#### SOME CONSIDERATIONS AS TO THE IMPACT OF IMPORTS OF TECHNOLOGY ON THE ECONOMY

A major goal of the economic policy of Poland in the last 10 years has been to achieve a positive balance of payments through a rapid increase of exports, particularly to markets with transferable currency. According to data published by J. Monckiewicz in "Polish Licensing Policy", Warsaw XI, 1981, the following is the share of imports related to the acquisition and *implementation* of foreign technologies in total Polish imports during 1971-1980 (in %).

1971	1972	1973	1974	1975	1976	1977	1978
3.1	3.6	3.7	4.5	5.0	5.9	6.6	4.3

As can be seen from the above data, the dependency of Polish industry on imports related to purchased technologies increased more than twofold in the analyzed period. The decrease in 1978 may be attributed to a strict, centrally-performed cut of imports rather than to other objective reasons.

Another reason for the continuous growth of such dependency may be the weakness of central planning mechanisms, in which Polish licensees were not "economically" responsible for the cost of the implementation of that technology and no sufficient amount of high quality raw materials or components were available in the domestic market.

According to available information, exports based on imported technologies represented the following share in the total of Polish exports in the period 1971-1978 (in % of total exports):

1971	1972	1973	1974	1975	1976	1977	1978
4.4	4.2	6.2	6.2	5.4	5.3	6.2	6.0

Another analysis worth considering is the comparison of inflows related to technology acquisition represented by *export earnings*, with outflows for which payment of fees, royalties, purchase of equipment, etc. are accounted.

1973	1974	1976	1977	1978
46.6	48.6	37.6	39.1	54.9

Source: J. Cieslik, "Polish Experience in Regulating Imports of Technology"

As can be easily seen on the average, the outflows

were more than 2 times higher than the inflows and the total negative effect on the balance of payments can be estimated for this period at \$2 billion. That is 8-9% of the total accumulated foreign debt of Poland at the end of 1980. It should be realized, however, those ratios should decrease in the future, particularly when the installed production capacities start working at full production. The decrease of the ratio in 1978 seems to indicate this trend.

In terms of implementation of imported technology within the manufacturing facilities of the licensee, one should note that by the end of 1980 only 342 licenses out of the 422 acquired—80%—had been industrially put into operation. The delays in implementation were on the average of 30% of all cases, but the assumed levels of production were not reached in 50% of the cases.

This situation, no doubt, led into increasing difficulties in the national economy as a whole, and slowed down the ambitious export program.

It should be mentioned, however, that the obstacles resulting in delays of implementation and industrialization of the imported technology were commonly not attributed to technical problems but almost exclusively to the lack of resources for the continuation of the individual investments and imposed restriction on imports of spare parts, raw materials, etc.

In other words, long-term planning failed as a tool for the overall coordination of investment and foreign trade programs.

Another fact should be added. Yearly operative plans of technology imports have been often modified due to pressures from individual corporations. As a result, and to give an example, in 1977, 72 licenses should have been acquired but only 30 were received. Only six were according to the original assumption.

Finally, local R&D facilities have not been fully utilized to improve imported technology. Among 472 licenses acquired in the period 1971-1980, only in 124 cases was such improvement R&D work started.

The attempt of Poland to rapidly modernize its industry by means of huge imports of technology has been largely successful. However, one may question the wisdom of developing this or that particular project.

Thanks to an unprecedented investment effort, most parts of the Polish industrial sector are at present among the most modern industries in Europe. Also, Poland has a highly skilled and innovative labor force.

It seems, however, that the objective of a massive export drive, particularly into hard convertible currency markets largely failed.

The reasons should be sought both in the internal and the external situation.

In terms of the external effects, we should not overlook the general slow down and crisis caused by the rapid increase of oil prices by OPEC. The increases led to massive recessions throughout the world, and definitely affected Polish exports as well as Polish investment capacities.

It seems also that heavy central planning systems at the time prevailing in Poland, combined with national investment programs, led into ill planning of technology imports leading into huge delays in project implementation.

The worsening economic situation of Poland led to arbitrarily-imposed import restrictions which in turn affected not only the completed projects (of major export potential) but also the complete freeze of many unfinished investments.

It is extremely difficult at present to forecast developments in Poland. It seems that the only reasonable path to economic recovery will be to diminish the role of central planning into an indicative one, giving individual corporations full freedom to perform their economic functions. The near future will show whether this path has been chosen.

#### NOTES

1. J. Cieslik: Polish Experience in Regulating Imports of Technology, p. 3
2. Ibid.