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METHODS OF FINANCING IRON AND STEEL INDUSTRIES
IN DEVELOPING COUNTRIES^{1/}

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S U M M A R Y

1. Introduction

A general description is given of how finance (mainly foreign funds) is raised for iron and steel projects in developing countries, based on examples in which Japan has participated.

2. The Project must be feasible

The prerequisite of an iron and steel project is that it must be feasible. In many projects of developing countries the infrastructure burden falls on the iron and steel industries concerned, which makes the project impracticable.

3. Financing Iron and Steel Industries

Loan from a single country

When relying on only one developed country for financing an iron and steel project, there are two cases: one is a case which derives from a special relationship; the other is a case which derives as a result of competition among developed countries concerning the project as a whole. The Valika Special Steel Plant in Pakistan, the Chittagong Steel Plant in Bangladesh, and the Pohang Steel Mill in South Korea are examples of the former, and the Durgapur Alloy Steel Plant in India is an example of the latter.

Loan from multiple countries

According to this method an international bid is made piecemeal for blast furnace, converters, coke oven, mill, etc., for new or expansion projects of iron and steel industries, and deferred payment is obtained from the countries whose suppliers succeed in the bid. This case is very common. The SAIWA Steel Plant in Argentina is an example. This method

is suitable in obtaining the desired equipment at a reasonable cost.

Concurrent loan from IBRD and from multiple countries

According to this method, IBRD financing is added to the loan from multiple countries referred to above.

At the present time this method seems to be recommendable together with the loan from multiple countries. Examples are the three big steel plants in Brazil (CSN, USIMINAS, COSIPA).

4. Investment in the Iron and Steel Industries

Deciding whether to accept investment or not

The advantages of investment are:

- (a) Insufficient funds can be covered;
- (b) Technical guidance can be obtained in operating the enterprise.

The disadvantage is the fear of intervention in management, which comes from the resistance to nationalism.

Two cases of investments made by Japan

Investments made by Japan in the iron and steel industries are USIMINAS in Brazil and Malayawata in Malaysia. The present-day success is a result of the financial and technical aid and the efforts of both parties concerned, based on mutual trust between individuals in the two countries working on these two projects.

5. Conclusion

Recently, there has been a movement towards untied aid. Japan is showing a positive attitude towards this movement. When untied aid prevails all over the world, a new method of financing might evolve.

Each of the various methods of financing described has its individual merits and demerits, so the countries concerned with the projects should judge and decide which method to use.

1. Introduction

When a developing country plans an iron and steel industry project, there will be an immense need for financing the establishment. Therefore, the means of obtaining the finance is a great problem. The present situation is that, generally, in many cases, the developing country would have to rely on financing from foreign countries, as it is itself usually lacking in funds, especially foreign ones.

This report will try to describe the various ways of raising funds, based on the examples of investing and/or financing projects made by Japanese industrialists.

2. The Project must be feasible

The major requirements in planning an iron and steel industry in a developing country are the feasibility of obtaining the raw material, the demand for the finished product, the selection of the site, the expected cost, and other related items. A detailed survey and study is necessary, and so is the utilization of a reliable consultant. Naturally, no country will make investment or loan to a project that is not feasible. This matter, however, is not the subject of this report, so a detailed description will not be made here, but there is one thing which is worth mentioning: that is, when an iron and steel industry is planned in a developing country, such a project is usually planned in a country where the infrastructure, such as roads, water supply, harbor facility, electric power, housing, etc., is inadequate. In many cases, the development expenses of the aforementioned items are borne by the one project only, which makes

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the project economically unfeasible. It is necessary to allot some of the burden to other plants which are to be established later at the same site. As a matter of fact, one way of financing is that the government of the country should invest public money. With an eye to a plan for future overall development, it is necessary that the government should bear the greater part of the burden of infrastructure. Under such an overall plan, the iron and steel industry project is usually feasible.

3. Financing the Iron and Steel Industry

(1) Financing from One Country Only

When a developing country plans a new or an expansion project of the iron and steel industry, financing of the entire plan sometimes relies on a single developed country. This can arise as a result of mutual relations already established, or it happens sometimes as a result of competition among the advanced countries concerning the project as a whole. An example of the former concerning Japan is the yen loan to Valika Special Steel Plant (Pakistan), Chittagong Steel Ltd (Bangladesh), and the aid and loan to Pohang Steel Mill in South Korea. An example of the latter is the Durgapur Alloy Steels Plant in India, in which case the Japanese Government made a yen loan as a successful bidder for the project. The yen loans in these cases were made by the Japanese Government through the Export-Import Bank of Japan or the Overseas Economic Cooperation Fund.

Theoretically, the loan need not be a government loan; it may be a private loan. However the interest and term of a private loan is not favorable (in Japan, as a supplier's credit, the loan is made to Japanese suppliers by the Export-Import Bank of Japan), so a developing country selects the governmental yen loan. The disadvantage of this method is that nearly all of the main installations will have to be procured from Japan.

The advantage is that the conditions for loan are more favourable and that negotiations can be done with one single country only.

(a) An outline of the Valika Special Steel Plant in Pakistan

Pakistani Partner:

Valika Kamardin (Sind) Ltd. Karachi

Contracted sum:

US\$14,774,362.-

Date of contract:

February 9, 1968

Contractor:

Ishikawajima-Maruma Heavy Industries Co., Ltd.

Items of production:

Stainless steel sheet	5,000 t/y
Semi-finished bar	4,700
Bright drawn bar.....	6,500
Forged products	800
Steel casting	2,000
Armour plate	1,000

Gross construction funds:

Approximately 30 million dollars (of which foreign fund is 15 million dollars)

Main installations:

Electric furnace
Primary mill
Bar mill
Sheet and plate mill
Forging shop

Steel foundry

Conditions for yen loan:

Interest 5.7 %

Grace of 5 years

Redemption in 18 years

(b) An outline of Chittagong Steel Ltd. in Bangladesh

Bangladeshi Partner:

Chittagong Steel Ltd.

Date of contract:

March 1963

Contractor:

Kobe Steel Works, Ltd.

Items of production:

Steel bar	43,000 t/y
Thin sheet	50,000
Medium sheet	15,000
Ingots	150,000

Construction fund:

Approximately 45 million dollars (of which foreign fund is approximately 30 million dollars)

Main installations:

Three open-hearth furnaces

One oxygen generator

One blooming mill

One steel bar mill

One thin sheet mill

One medium sheet mill

One plating installation

One casting and forging installation

Conditions for yen loan:

Amount: Approximately 30 million dollars

Interest: 5.25 %

Grace of 5 years

Redemption in 16 years

(c) Pohang Steel Mill in the Republic of Korea

This project was decided at the Japan-Korea ministerial meeting held in August 1969.

Total construction fund:

Approximately 305 million dollars (of which foreign fund is 140 million dollars)

Item of production:

Ingots

Main installations:

One blast furnace (2,600 t/d)

Two converters (100 t/d)

Blooming mill

Medium sheet mill

Hot strip mill

Cold mill

Conditions for yen loan:

Free aid: 31 million dollars

Yen loan: 46 million dollars at 3.5 %

Grace of 7 years

Redemption in 20 years

This loan was made by OECF (Overseas Economic Cooperation Fund in Japan)

Deferred payment from Japan exim bank fund:

50.5 million dollars

Taking into account the special historical relation with Korea, Japan will look after all the foreign financing for this project.

(d) Durgapur Alloy Steel Plant in India

Indian Partner:

Hindustan Steel Ltd. Alloy Steels Plant,
Durgapur-8, West Bengal

Date of contract:

September 1963

Main installations:

Melting	100,000 t/y
Blooming	85,000
Thin sheets	18,000
Forging	4,000
Steel bars	32,400

Yen loan (entire foreign fund):

Approximately 43 million dollars

Interest: 5.75 %

Grace of 5 years

Redemption in 15 years

The bid for the project was made in 1962. Twelve countries, including Japan, England, France, West Germany, Canada, and others participated in the bid. The Japanese group called India Special Steel Plant Construction Co., Ltd. (founders -- Hitachi, Ltd.; Mitsubishi Heavy Industries, Ltd.; Sumitomo Shipbuilding & Machinery Co., Ltd.; Ishikawajima-Harima Heavy Industries Co., Ltd.; Daido Steel Co., Ltd.; Okura Trading Co., Ltd.) succeeded in the bid.

(2) Financing from Multiple Countries

If financing relies on only one country in planning an iron and steel industry project, the main installations would have to be procured from that one country at the present time when untied aid has not been generalized. Therefore, a method of procuring equipment by bid and paying the cost from private funds financed in the advanced country could be considered. Examples of this method are numerous. The method is being used by countries which cannot be considered to be developing countries, such as Australia, for the purpose of enlarging recent iron and steel establishments. In developing countries, too, the SOMISA steel industry in Argentina, for example, employed this method in the international bid which was made during 1971 - 72. A piecemeal bid is made for the blast furnace, the steel converters, the coke furnace, the mill, etc., and procurement is made from the most favorable supplier; provided, however, that a request is made in advance to the main developed countries, requesting their approval of a deferred payment under certain conditions if the supplier in that country succeeds in the bid. Further talks are resumed after obtaining the consent.

In the bids concerning this project, the Japanese supplier was able to contribute to the material handling installation only (6 million dollars). However, this was allowed as a supplier's credit in terms of a long term (12 years) deferred payment. (Usually, the term for a credit of this amount is around 5 - 7 years.) This condition was informally permitted under the assumption that bids could be made for larger installations.

(3) Concurrent Financing from IBRD and from Multiple Countries

In this method, the financing from multiple countries referred to above is supplemented by IBRD financing. However, IBRD is first requested to finance and any deficiency is met by financing from multiple countries. There is a limit to the IBRD funds for new and large-scale projects for constructing or expanding steel mills, and so it is difficult to obtain full financing. Therefore, this method is also used to obtain financing of the balance from countries which made piecemeal bids. Of course, IBRD makes a thorough feasibility study, and so when IBRD makes a loan the project could be deemed to be a project worthy of financing by advanced countries. Brazil is utilizing this method in expanding its steel mills. The three large steel mills of Brazil (CSN, USIMINAS, and COSIPA) have a plan to expand their present 1971 capacity of 3,000,000 t/y to 7,500,000 t/y, and the estimate of the total cost is approximately \$1,100,000,000 (see Table I). For this project, Brazil set up a promoting organization known as CONSIDER to negotiate with IBRD, IBD, and the major advanced countries.

TABLE I

CHART SHOWING THE NEW ESTABLISHMENTS AND EXPANSION PROJECTS OF EACH OF THE THREE IRON AND STEEL MILLS OF BRAZIL

1. New Establishments

(a) CSN

Sintering plant, coke furnace and by-products installation, blast furnace, steel plant (LD converters), continuous slab-casting installation, electrolytic tinning line, oxygen plant.

(b) COSIPA

Coke furnace and by-products installation, blast furnace, slab-heating furnace, plate mill, boiler plant

(c) USIMINAS

Blast furnace, steel plant (LD converters) continuous casting installation, hot scarfing installation, plate mill, oxygen plant

2. Expansion Projects

(a) CSN

Mining and ore adjusting installation, ore and coal yard, hot strip mill, foundry, work shop, ancillary services

(b) COSIPA

Dockside installation, ore and coal yard, steel plant (LD converters), oxygen plant, coil annealing inspection installation, ancillary services

(c) USIMINAS

Coke furnace and by-products installation, annealing installation, recoiling line, transportation and ancillary services

Japan accepted the request, and in October 1972 the Japan Export-Import Bank, together with 21 commercial banks in Japan, signed a financing contract for buyer's credit. A general resume of the financing contract is as follows:

(a) Amount:

CSN Limit 15 billion yen
USIMINAS Limit 20 billion yen
COSIPA Limit 20 billion yen

(b) Interest:

7 % per annum

(c) Term:

15 years including 3½ years deferment

(d) Use:

Purchase of Japanese made machinery and labor for the fulfilment of the second iron and steel industry expansion plan of Brazil.

The important point to be noted in this contract is that it is the first time that the Export-Import Bank of Japan granted a buyer's credit to an iron and steel industry project. Till now a yen loan in the form of aid was made by Japan to the government of the other party, but a long-term commercial loan, which is not aid, was only available as a supplier's credit made through the Export-Import Bank of Japan.

The second important point to be noticed is the financing amount indicated. Take CSN, for example: the amount indicated is, "Limit 15 billion yen." This means that a loan up to this limit will be made if a Japanese Supplier succeeds in the bid. Therefore, the loan could be nil if the Japanese Supplier fails to succeed in all of the several part bids.

This is a very advanced method. At the present time when the United aid system is not fully being practiced, the method, together with that of financing from multiple countries, seems to be useful in establishing newly or in expanding the iron and steel industry installation hereafter.

Certainly, Mexico is utilizing this method in establishing the Siderurgica Lazaro Caldenas - Los Truchas, S.A. (SICALTSA) Steel Mill.

However, even this method has its disadvantages: requests for finance will have to be made to IBRD and each one of the main developed countries. However, this disadvantage is not a major obstacle.

4. Accepting Investment

(a) Deciding whether to Accept an Investment or Not

In planning an iron and steel industry in a developing country, whether to accept foreign investments or not is one of the most serious problems. Generally, there are two advantages in accepting foreign investment.

- (i) Inadequate funding be covered, and there is no interest until such time as dividend can be paid.
- (ii) Guidance can be obtained in management and technology.

On the one hand, the disadvantage is the resistance resulting from nationalistic thinking, in which intervention in management is thought to be undesirable because the iron and steel industry is a major industry of the country. Consequently, even if foreign investment is made, the present trend is for investment to be less than 50% of the capital.

(2) Two Cases of Investments made by Japan

Investments of this kind made by Japan in developing countries MINAS in Brazil and Malayawata in Malaysia.

(a) USIMINAS (USINAS Siderurgicas de Minas Gerais S.A.)

An integrated iron and steel mill with a capacity of 500 tons/year was established with the cooperation of Japan. In April 1957, The Japanese Government decided to aid the project. The Japan USIMINAS Co., Ltd. was established on December 26, 1957 with the mutual agreement of the Japanese and Brazilian parties concerned for the purpose of financing on the Japanese side. Investment, technical cooperation, and the necessary machinery and installations were to be supplied to USIMINAS, and on January 25, 1958 USIMINAS Co., Ltd. was established in Brazil. In the beginning the starting capital of the company was 3,200,000,000 Cruzeiros but, because of the advancing inflation in Brazil, the deferment of credit due to insufficient foreign funds, and other complicated circumstances, the capital of the company was 150 billion Cruzeiros when the project was completed in 1966.

The main organization of shareholders is as follows:

Banco Nacional do Desenvolvimento Economico (BNDE)	59.45 %
Japan USIMINAS Co., Ltd.	21.46 %
The Federal Government of Brazil	12.46 %
Companhia Vale de Rio Doce	3.23 %
MINAS GERAIS State Government and others ...	3.17 %

The Japanese Government has continued to provide aid through the Export-Import Bank of Japan and the Economic Cooperation Fund for financing and increasing the capital of Japan USIMINAS Co., Ltd. In addition a credit of approximately 36,200 million yen (approximately 100 million dollars), in several installments, as deferred payment funds for the machinery and installations was provided through the Export-Import Bank of Japan.

The capital of Japan USIMINAS as of 1966 is 8,100 million yen, and the shareholders are as follows:

Yawata Iron & Steel Co., Ltd.
Fuji Iron & Steel Co., Ltd.
Nippon Kokan K.K.
Kobe Steel works, Ltd.
Kawasaki Steel Corporation
Sumitomo Metal Industries, Ltd.
Nakayama Steel Works, Ltd.
Tokyo Shibaura Electric Co., Ltd.
Hitachi, Ltd.
Mitsubishi Electric Corporation
Ishikawajima-Harima Heavy Industries Co., Ltd.
Shibaura Kyodo Kogyo K.K.
Fuji Electric Co., Ltd.
Mitsubishi Heavy Industries, Ltd.

Japan USIMINAS provided the technical cooperation with the cooperation of Yawata Iron & Steel Co., Ltd., Fuji Iron & Steel Co., Ltd., and Nippon Kokan K.K.

The main installations of USIMINAS as of 1966 was as follows:

Two blast furnaces
Two L.D. 45t
One blooming mill
One thick sheet mill
One 80" hot strip mill
One 66" cold strip mill

As mentioned in the previous chapter, the expansion project of USIMINAS is continuing.

(b) Malayawata Steel Mill Co., Ltd.

This company was established in August 1965 between the parties of Japan and Malaysia. The total investment is 200 million Malaysia dollars and the paid-up capital is 30.2 million Malaysia dollars (as of the end of 1968). In July 1967 the Malaysia Industrial Development Finance Ltd. (MIDFL) and in August of the same year the International Financial Corporation (IFC) joined the group by making investments. The shareholders are as follows:

IFC	10.0 %
MIDFL	6.5 %
The Government of Malaysia	11.1 %
General public subscription	13.6 %
Malaysians	10.0 %
Malaysia corporations	<u>9.8 %</u>
Sub-total	61.0 %
Japanese investments:	
Mitsui & Co., Ltd.	6.0 %
Mitsubishi Shoji Kaisha, Ltd.	6.0 %
Tokai Sangyo	3.0 %
Nittetsu Mining Co., Ltd.	4.0 %
Yawata Iron & Steel Co., Ltd.	<u>20.0 %</u>
Sub-total	39.0 %

The largest shareholder on the Japanese side is Yawata Iron & Steel Co., Ltd. (which is now the Nippon Steel Corporation). This company is providing the technical cooperation.

The construction cost is estimated to be approximately 10 billion yen. The investment from Japan and the deferred payment loan for equipment from Japan is assumed to be around 70 %.

The point to be noticed in this project is that there is IFC investment.

USIMINAS and MALAYAWATA are thought to be the most successful projects. USIMINAS, especially, experienced difficulties arising from rapid inflation in Brazil. However, as a result of the efforts and cooperation of the parties of the two countries (Japan and Brazil), the industry has risen to its present flourishing position.

When there is mutual trust between the parties in the countries concerned, investment can produce good results.

5. Conclusion

The paper has outlined the sources of financing for iron and steel industry projects in developing countries.

The names of IBRD and IFC were mentioned as international financing (banking) facilities. There is also the IDA (International Development Association) of the World Bank group, the so-called Second World Bank. IDA is a facility which provides financing at very favourable rates, but has so far not financed any projects in the iron and steel industry.

As to regional international financing facilities, there is the IDB (Inter-American Development Bank) which is active in Central and South American countries, the ADB (Asian Development Bank) which is active in the ECAFE region, and the EDF (European Development Fund) which is active mainly in former African colonies, with financing from the six (now nine) EEC countries.

It can be said in general terms in regard to international financing that, up to the present, there has been no example of financing being forthcoming for the entire foreign exchange requirements of a large iron

and steel industry in a developing country. The deficiency has been met by other advanced countries; that is, deferred payment financing is obtained from the country from which machinery is purchased.

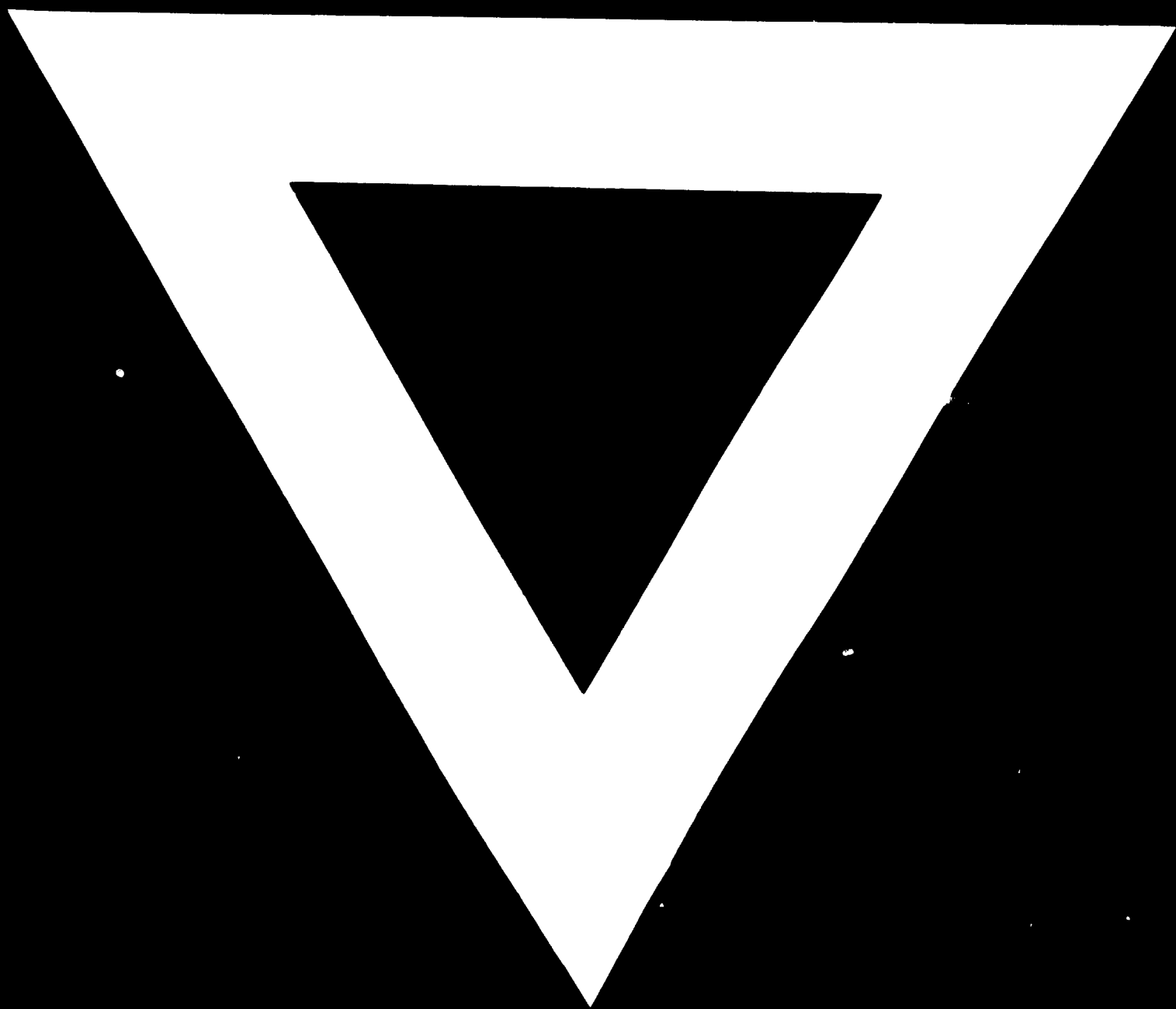
Just as Japan has the Export-Import Bank of Japan, each advanced country has a similar financing facility. The U.S.A. has the Exim Bank; the United Kingdom has an export credit guarantee system; France, the FNG, and Italy have some kind of a facility or system of financing.

Concerning financing in the form of aid between governments (you loan in Japan; similar methods in other advanced countries), the problem of untied aid has been under discussion for two or three years. Progress in this matter will probably open up a way to a different type of financing method for developing countries. The problem of untied aid has been discussed at DAC (Development Aid Committee of OECD) and progress has been made to the point of making a presentation of an agreement, but the final mutual consent of all the countries affiliated with DAC could not be obtained.

However, the Japanese Government, working independently, is slowly trying to promote untied aid, and so the future is likely to be interesting.

Finally, although there are many ways of financing the iron and steel industry as explained in the paper, the planners of the developing countries should make their judgments on the basis of prevailing conditions in selecting the most suitable method.





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